

AMERICAN VETERINARY REVIEW.

JUNE, 1915.

EDITORIAL.

EUROPEAN CHRONICLES.

Bois Jerome, 15th April, 1915.

AMONGST OUR ENGLISH CONTEMPORARIES. Although on account of the hostilities that have prevailed for months, the veterinary literature has had to suffer much and its periodicals prove poorer in material than previously. English journals have continued to appear with their ordinary punctuality and offer subjects of interest which it has been my pleasure to relate to our readers—pleasant task that I will endeavor to fulfil to-day.

The *Veterinary Journal* of February is before me with its stock of interesting articles.

Mortality Among Cattle in New South Wales, by Max Henry, M.R.C.V.S., is a detailed description of a disease which he was called to investigate, and he closes it with the following conclusions:

1. There exists in an isolated district of New South Wales, a disease closely simulating *Lamzickte* and impaction paralysis.
2. This disease is markedly associated with soil deficiency in lime and phosphate and subsequent food deficiency in phosphates.
3. The disease occurs at the end of droughty periods in a country much depreciated by rabbit infestation.
4. The distribution of the mortality coincides with areas on which "bone chewing" and osteomalacia has been for some time present.
5. Great benefit is obtained by feeding small quantities of

nutritious food and especially by returning skim milk to the cows.

6. Milk probably contains a substance that possesses protective properties.

7. The idea of a deficiency of phosphates is the ultimate cause, either directly or through want of substances containing them, of the diseases known as lamziekte and impaction paralysis would appear to be supported.

These are the conclusions of a report presented by the author to the Department of Agriculture.

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The excellent *Journal of Comparative Pathology and Therapeutics* for last December gives to its readers a lengthy report of a series of experiments made by Sir John McFadyean, M.B., C.Sc., LL.D., and A. L. Sheather, M.R.C.V.S., in regard to the *different methods of tuberculin testing*, experiments whose chief points were on: 1st. the temperature effects produced in healthy and infected animals by the intravenous inoculation of living bacilli. 2d. The temperature reactions produced in infected animals subcutaneously tested with homologous or heterologous tuberculin.

3d. The reactions produced in infected animals by the intracutaneous and conjunctival tests.

4th. The comparative merits of the three different methods of applying the tuberculin test, subcutaneous, intracutaneous and conjunctival.

In a first part are considered the effects of intravenous inoculation of tubercle bacilli on the temperature, making tests on animals infected with human, avian and also bovine bacilli. These last being the most numerous, and the most important of the observations because of their immediate bearing on the comparative reliability of the three tests in actual practice.

The various tests of this last record the experiments made with the three different methods, the different manifestations being handsomely illustrated.

Unable to follow Sir John McFadyean and his associate Mr. A. L. Sheather, I may present the conclusions or the *comparative advantages* of the three methods of testing as revealed by the series of experiments and tests described by the authors.

1. "*Subcutaneous Test*: Tuberculin when injected under the skin of the neck or chest wall of a tuberculous animal may cause (1) an elevation of the body temperature; (2) a systemic disturbance, manifested by acceleration of the respiratory movements, staring of the coat, coughing, diminished secretion of milk, loss of appetite and diarrhea; (3) a local reaction in the shape of inflammatory changes around the point where the tuberculin was injected."

2. "*The Conjunctival Method*: The advantages claimed for it are: greater simplicity; repeated positive reactions may be obtained with short intervals between the successive tests; it produces no systemic disturbance and therefore no diminution in the yield of milk; it may be employed in almost any circumstances provided the animal to be tested has normal conjunctiva; the results of the test are less difficult to interpret than the temperature variations upon which one has almost entirely to rely in the case of the subcutaneous method."

3. "*The Intercutaneous Test*: This method has had fewer failures, at the hands of the writers, than the conjunctival, but it was less accurate than the cutaneous. With the conjunctival method the advantage that marked reactions may with little chance of error be accepted as proof of infection, but also the disadvantages that negative results are far from justifying the conclusion that the animal is non-tuberculous.

" This method has the disadvantage that the tested animal must be examined for evidence of reaction, not only on the day of the test but also on the following one, owing to the fact that late development of the swelling has great diagnostic importance."

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The tests made with the conjunctival method and the intercutaneous are handsomely illustrated, especially the latter, where

the differences exhibited in the anal folds are very suggestive of the conclusion of the test. Our reader friends will bear in mind that the name of intra-cutaneous is here given to the intradermo operation used on the Continent by Moussu and others.

Conclusions of the article of Sir John McFadyean and Sheather read: "In what precedes the three methods of testing have been compared as if the diagnosis had to be based on the results obtained by their separate employment, or as if it were more commonly necessary to test by a single method. That, of course, is not the case and the question of the relative liability of the three methods of testing therefore loses most of the importance which it would otherwise have."

"There are special circumstances in which the subcutaneous method cannot be used alone or in which its indications cannot be accepted with any degree of confidence. The most important of these are the existence of a high and unstable temperature in the animal that has to be tested or a strong suspicion that it has recently been treated with tuberculin by subcutaneous injection in order to diminish its tendency to react. Only the first of these, however, is a positive barrier to the employment of the subcutaneous test. In all other circumstances the proper course is to test simultaneously by all three methods, for the combined indications which can be thus obtained afford a far surer guide to correct diagnosis than the result of any one of the methods applied by itself. But it must be repeated that where the circumstances already mentioned do not forbid the use of the subcutaneous test, it must not be omitted in favor of the conjunctival or intracutaneous tests, either separately or combined. The conjunctival method used alone is the least reliable of the three when its results are negative."

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SHORTAGE OF VETERINARIANS. For some little time past and more recently the veterinary journals of England and the press in general have had articles on this question which un-

doubtedly has gained an importance of actuality by the last condition of events in Europe. The *Scotsman*, an important journal of London has lately had an article on the subject which was reproduced in the *Record*, which refers to the question and treats it very wisely.

"In time of war no section of the community is unaffected in so far as individuals are concerned; but there are two civilian corporate bodies of men who are affected collectively as well as individually. The medical and veterinary professions stand together inasmuch as they are professionally concerned, whenever a war of any magnitude breaks out. It is readily realized that an international conflict like the present entails a very serious drain upon the general medical practitioners of the country. It is not so readily evident that the ranks of the veterinary practitioners are in like manner thinned. And yet a moment's thought will convince anyone that the regular staff of the Army Veterinary Service must be quite incapable of coping with the work incident upon a great war without calling to its aid a large number of those who normally practise the civil branch of their profession. As a consequence, at the present moment, animal owners in all parts of the kingdom are unable to obtain the normal amount of veterinary service * * *.

"Under any circumstances and at any time a war involving the use of so many horses and, consequently, the military employment of so many veterinarians as does the present, would lead to inconvenience; but at the present time the results are more important than they might be, and this for various reasons."

The article then continues in the consideration of those reasons.

First comes the reduction in the number of students attending the various schools.

"For many years the number of students of the various veterinary colleges has been shrinking, with the result that the number of legally qualified veterinary surgeons has fallen." The registers of the Royal College of Veterinary Surgeons show it, and it is safely asserted that not one of the public veterinary

services is able to get all the veterinarians it requires. And the *Scotsman* asks what will happen when the new act on milk and dairies be enforced and which demand the appointment of a member of the R.C. of V.S. to act as inspector. And although the shortage of "veterinary surgeons now existing and felt at the present, it is certain that in the very near future it will have more serious consequences."

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"Doubtless the diminution in the number of veterinary students is largely due to what may be called the 'motor scare.' It has been assumed quite erroneously that the horse is doomed to extinction and that therefore the work of the veterinary surgeon must disappear. The assumption is erroneous for at least two reasons:

"That there is no danger of the extinction of the horse is clear from the present almost feverish discussions as to the best means by which horse-breeding may be encouraged and the horse supply maintained." Questions which are extensively considered in all horse raising countries of the world. "The problem of how to secure an adequate supply of horses for army and other purposes is one of considerable importance and is receiving a due amount of attention."

"The second fallacy is that the veterinary profession exists for the care of horses only, at least in the minds of the public. With the recognition on the part of the stock-owner, that it pays to keep well-bred animals, the monetary value of the stock in the country is rising. In quite unexpected places, pedigree animals are to be found. This means that it now pays to obtain veterinary assistance and advice in quarters where, not many years ago, such assistance would have been dispensed with."

"The scarcity of veterinary surgeons is certainly not due to a narrowing of the field of activity. The general practitioner has rather a wider field than formerly and his services are no less urgently needed. This, combined with the claims of the

public services, makes the scarcity of veterinary surgeons a serious matter. To those who realize all that it means, the shrinkage of the veterinary profession is regarded as nothing short of a national calamity."

And yet while it is from England only that at present this threatening scare of veterinarians is mentioned, the question might be asked, is it not possible to occur in other countries, where possibly the practice of the veterinary profession, in civil or army service, may prove so poor in the prospects of the "struggle for life" that young men will be deterred from entering it.

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INTRA-DERMO MALLEINATION. Some time before the war was declared, a special commission of veterinarians was appointed by the French Government to go to Greece and organize the veterinary profession at Athens. The principal chief of the commission was Mr. Drouin, the well-known veterinarian, known for his works, his writings and professional ability. Of course the war declaration cut short his labors in Greece and he immediately came back to fill his place with the veterinarians of the French army. His return to France is the occasion for the publication in the *Revue of Leclainche & Panisset* of an article on *Intra-Dermo Malleination*.

The application of tuberculination by the several methods which are well known to veterinarians has had so far as malleine is concerned but few advocates, except perhaps as far as the case has been of the ophthalmic reaction. And as Drouin arrived in Greece he immediately took advantage of the many occasions that were offered to him to study in a wide scale the intra-dermo reaction, first in isolated cases and then to apply it to a large number of animals where infection existed.

The method is the object of this communication. It is claimed exclusive of all taking of temperatures, and requires the presence of the veterinarian only at the time of the injection

and at that of the recording of the results. Only a very small number of assistants are required and thus the method can be applied in the most unfavorable conditions of ordinary practice.

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The technic of the operation is recorded as follows: *Dilution* of the malleine and *dose* to inject. Physiological serum at 8 p. 1,000 is used to make the dilution, 1 part of brute malleine is added to 3 of saline serum and the dose to inject is 1/10 of c.c. of the dilution, corresponding to 1/40 of c.c. of brute malleine, a dose ten times less than in the subcutaneous method.

Selection of the place of injection. The wing of the nostrils and the eyelid have been tried. But finally the last was adopted as giving the reaction characters more perfect.

Instruments. Graded syringe with fine and short needles.

Restraint. Twitch is sufficient.

Modus Operandi. The right eye is the most convenient, although either one can be used. An assistant disinfects with a dilution of tincture of iodine the lower eyelid, which the operator holds, making a fold of the skin with the thumb and index and the needle is implanted horizontally in the thickness of the dermis and the injection pushed in. It is necessary to avoid introducing the needle immediately in front of a hair bulb as it would prevent the injection from going in. The method is sufficiently simple to permit 100 horses to be injected in one hour.

Results of the Operation. On healthy animals, no reaction occurs in the 24-48 hours following the injection. In glandrous subjects, on the contrary, there is a large oedema, spreading not only on the lower but also the upper eyelid. Sometimes the eye is entirely covered by a double swelling or at least the palpebral slit is considerably reduced.

The reaction begins to show towards the 10th hour, reaches its maximum between the 24th and 48th. It is best to take the record between the 24th and 36th hour. It is advantageous

then to make the injection early in the morning and have the whole of next day for the record of the results. With this condition of the eyelids, there may also sometimes be lacrymation, redness and injection of the conjunctiva with muco-purulent discharge, sometimes quite abundant.

In some cases, somewhat rare, the reactions may be imperfect. The swelling takes place only on the lower eyelid, is very small, the conjunctiva is scarcely inflamed, and the discharge remains limpid; or, again, the swelling is scarcely present and the conjunctiva showing no reaction. The first are suspicious and must be tested on the other eye after a short time. It is rare if the second test is not clearly negative or positively positive. At any rate, if there remains yet a doubt, the subcutaneous method will readily decide the case.

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The conclusions are in favor of the new method. The intra-dermo malleination can furnish, for the diagnosis of glanders, results that can be entirely compared to those of the classic subcutaneous method.

It simplifies considerably the operations in removing the recording of the temperatures and allowing the veterinarian to select his own time for the operation and the recording of the results. It can be applied to febrile patients, which are precisely the most dangerous. It can be used in all conditions and is not influenced by varieties of external temperature. It is not exclusive of any other method of control, the small dose of injected toxine not altering in any way the condition of the organism.

It can be renewed within twenty-four hours in case of doubtful reaction.

It is surer in its application than any other method for local reaction, especially the ophthalmic.

It can be compared to the thermic method from the point of view of absolute value, without having any of its inconveniences.

It does not pretend to absolute infallibility, but it is certainly very superior to all the modes of local reaction by scarification, ophthalmic-reaction, etc., etc., and it gives information equal in value to the thermic method, without having the same inconveniences of application.

It recommends itself to the practitioner because of two qualities, the smallest per cent. of failures and its easy application.

A. L.

THE CALIFORNIA MEETING.

Enthusiasm is running high throughout the country in anticipation of the meeting of the A. V. M. A. in California, August 30 to September 3, even before the committee announces its pro-



In the heart of the business district of Oakland. The large building in the distance is the Hotel Oakland—A. V. M. A. headquarters.

gramme, which we hope to publish in whole or in part in the July issue. We have recently learned from the chairman of the arrangements committee, our good friend Prof. Haring,

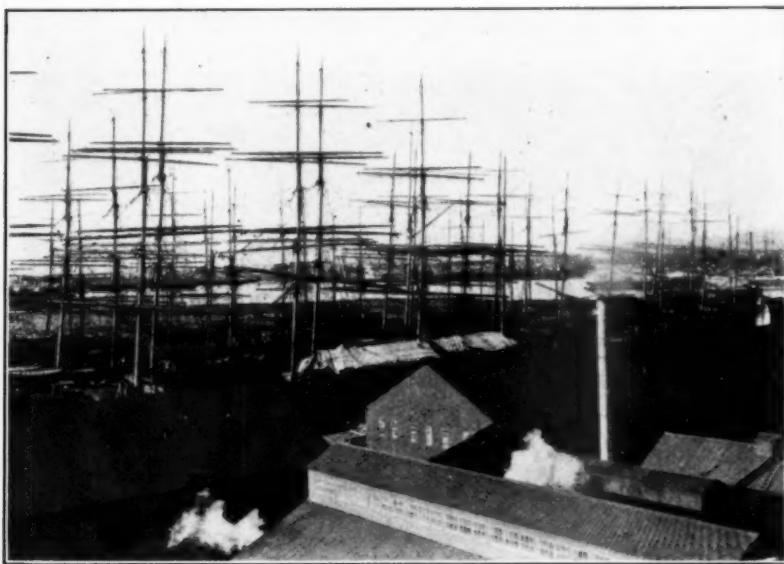
something more of the day in San Francisco (Friday, September 3), which we referred to in our May issue, under *Notes of Information on the Exposition at San Francisco* (page 249), as A. V. M. A. DAY. Our further information being that in addition to the programme for the entertainment of our members in the exposition grounds, there will be a session at the Veterinary Hospital of the United States Presidio; which, as we have stated in a previous number, is near by. The detailed programme of this special day, however, which Dr. Haring says



Looking across Lake Merritt toward the business district. Lake Merritt is the only salt water lake in the world which lies within a city's limits.

there is reason to believe will be the most enjoyable and profitable session of the convention, we will also be unable to present to our readers until our next issue. The committee have also decided to avail themselves of the large rooms in the Hotel Oakland, in which to hold their sessions; perhaps also holding some of the section meetings in the Chamber of Commerce building, directly across the street, instead of meeting at the Municipal

Auditorium, which was first planned by the committee, as announced in our May issue. The advantages of meeting under the same roof as A. V. M. A. headquarters cannot be overestimated; as all who attended the meeting in New York in 1913 will agree. And while we are on the question of hotel headquarters, so that every one will be comfortable and no one disappointed, we will remind those who desire to stay at headquarters, that the Na-



The Alaska Fishing Fleet, which winters and outfits in Oakland harbor. This is the largest fleet of sailing vessels in the world.

tional Education Association, which, as we stated in our May issue, immediately precedes our meeting and is expected to bring 60,000 visitors to Oakland, is liable to leave some of them there for a time after their sessions have ended, it will be well to secure accommodations at the Oakland well in advance. Dr. Haring also urges that precaution for the same reason.

Following is a list of some of the Oakland hotels, with addresses and rates:

HOTEL OAKLAND, A. V. M. A. HEADQUARTERS, 13th and Harrison—For one person in room with detached bath, \$2 and \$2.50; with bath, \$2.50 and \$3.50. For 2 persons in

room with detached bath, \$3 and \$3.50; with bath, \$4 and \$5.50. 2 adjoining rooms with bath between, for accommodation of 4 persons, \$8.

Key Route Inn, 20th and Broadway—For one person in room with detached bath, \$1 and up; with meals, \$2.50; with bath, \$1.50 and up; with meals, \$3. For 2 persons in room with detached bath, \$1.50 and up; with meals, \$4.50; with bath, \$2.50 and up; with meals, \$5.50. This hotel furnishes special rates for parties under the European plan of \$1 per person in room with bath, and under the American plan of \$2.50 per person in room with bath.

Hotel St. Mark, 12th and Webster—For one person in room with detached bath, \$1.50 and up; with bath, \$2 and up. For two persons in room with detached bath, \$2.50 and up; with bath, \$3 and up.

Hotel Menlo, 13th and Webster—For one person in room with detached bath, \$1 and up; with bath, \$1.50-\$2. For 2 persons in room with detached bath, \$1.50; with bath, \$2-\$2.50. Adjoining rooms with bath between for accommodation of 2 to 4 persons, \$3.50.

Hotel Metropole, 13th and Jefferson—For 1 person in room with detached bath, \$1; with bath, \$1.50. For 2 persons in room with detached bath, \$1.50; with bath, \$2. For 2 persons in room with detached bath per week, \$6; with bath, \$8.

Hotel Athens, 1556 Broadway—For 1 person in room with detached bath, \$1; with bath, \$1.50. For 2 persons in room with detached bath, \$1.50; with bath, \$2. Meals: Breakfast, 50c.; lunch, 50c.; dinner, 75c.

Hotel Crellin, 12th and Washington—For 1 person in room with detached bath, \$1 per day, \$6 per week; with bath, \$1.50 per day, \$9 per week. For 2 in room with detached bath, \$1.50 per day, \$7 per week; with bath, \$2 per day, \$10 per week.

And while we are discussing the comforts of those who will attend the Oakland meeting, we would remind such of them as have never visited the San Francisco Bay region during the summer months, that the climate there, although delightfully comfortable and bracing, is far from being tropical. Men will

need their overcoats and women their wraps, and should not make the mistake of leaving them at home with the idea that they will *not* need them. During a greater part of the trans-continental trip that we described in our May issue, the temperature will probably be warm enough for comfort in the thin-est wearing apparel, but after the ride through the wonderful Feather River Canyon, the lower Sacramento and Upper San Joaquin valleys, it will be different; and on leaving the Pullmans on arrival in Oakland, overcoats and wraps will add to the travelers' comfort, as they feel the bracing breeze of the Pacific Ocean; and those who made the trip in 1910, will be reminded of the trip across the bay from Oakland to San Francisco, when cravents and wraps were donned and collars turned up by all on board that mammoth ferryboat.

Oakland boasts of a slightly warmer summer climate than San Francisco. The meteorological record kept by the University of California, at Berkeley, where the climate is practically the same as in Oakland and San Francisco, during the past twenty-seven years shows an *average* temperature of about 60 degrees for the months of June, July and August. The average of the highest temperatures for each day is about 70 degrees, and that of the lowest is about 53 degrees. Extremes of heat are rare; the temperature of the hottest part of the warmest day seldom exceeds 90 degrees, and in many years this temperature has not been reached. These higher temperatures last but a few hours at a time, and as they are accompanied by low humidity they are very rarely oppressive. Rain is practically unknown in July and August, but showers *sometimes* occur early in September. The prevailing wind is a gentle breeze from the south-west, which brings the cool, bracing air of the Pacific Ocean. Can you imagine anything more ideal, even if you do find occasion to don a light overcoat or wrap in the evening?

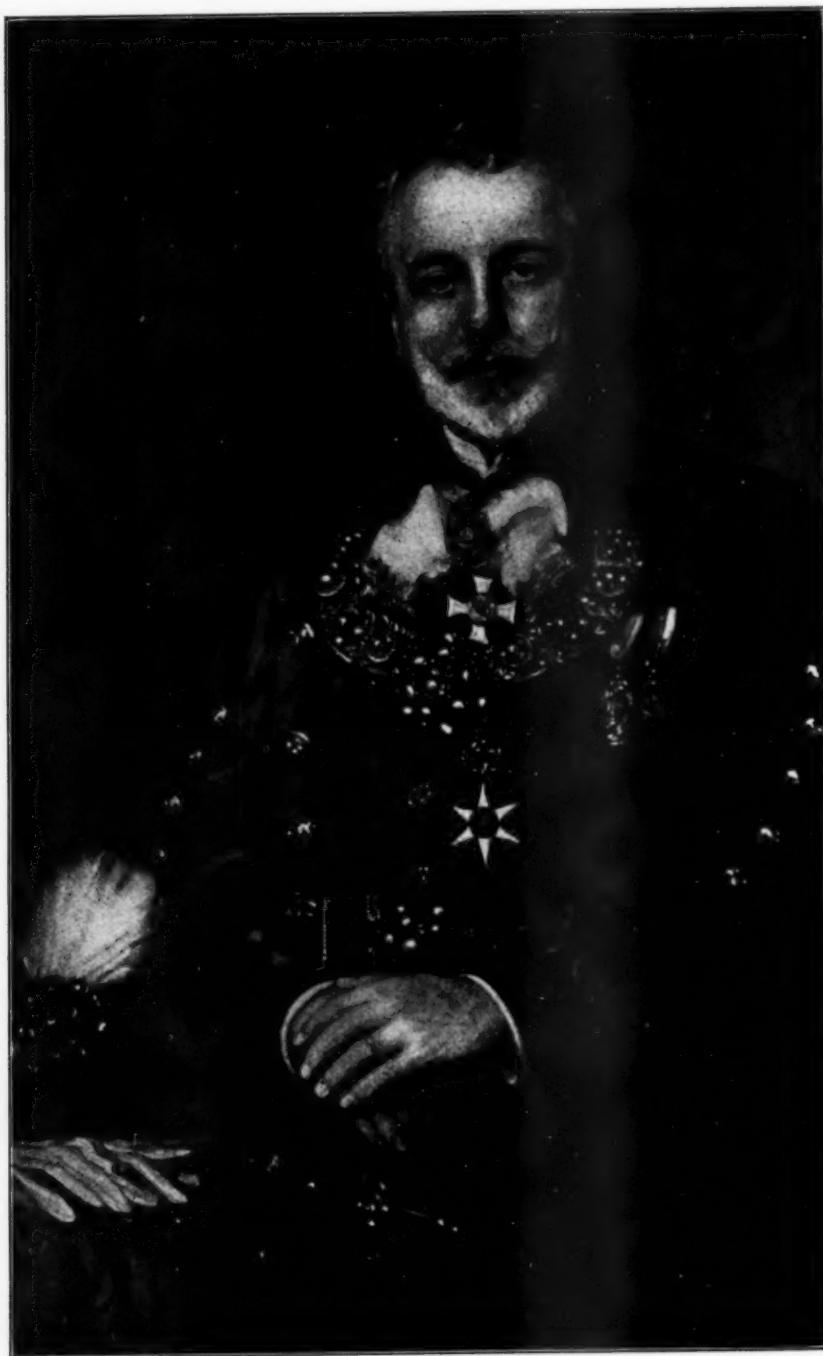
THE SPECIAL TRAIN.

Since our announcement in the May REVIEW, Secretary Mayo has mailed to each of the members of the American Vet-

erinary Medical Association, a little booklet describing and illustrating the beautiful scenic route of his selection (for which selection he has been complimented by the local committee of arrangements (see page 382) and giving much valuable information. Such, for example, as the names and addresses of local agents from whom further information can be obtained, in seventeen large cities throughout the states and one in Canada, also enclosing a reservation postal card addressed to Mr. A. J. Puhl, 141 S. Clark street, Chicago, Ill., General Passenger Agent of the Burlington Route, upon which to apply for your berth from Chicago to Oakland on the American Veterinary Medical Association Special Train, leaving Chicago (Union Passenger Station), via Burlington Route, at 11 p. m., Tuesday, August 24th. This will obviate the necessity of writing to Secretary Mayo, as suggested in our May issue. For our readers who are *not* members of the A. V. M. A., and have therefore not received the pamphlet and reservation postcard, the foregoing information will suffice for making their reservations.

PROFESSOR HUTYRA.

The accompanying cut of Professor Hutyra is made from a photograph kindly loaned us by our esteemed friend and collaborator, Dr. W. Reid Blair, who was one of those fortunate enough to have been present at a banquet at the Zoological Park in Budapest, Hungary, and responded to Prof. Hutyra's remarks made at the banquet, as related on page 170 of the May issue of the REVIEW. This picture should have been used in that connection, and it was our *intention* to have it form part of the illustration of that portion of Drs. Eichhorn and Marshall's narration of the visit to Hungary; but illness unfortunately caused us to omit it. We believe, however, that our readers will forgive us the omission, since we have given them at this time the pleasure of looking upon the handsome features and princely bearing of this great man, to whom they owe so much, for the works, that since their translation into English, have been universally welcomed by American veterinarians.



PROFESSOR HUTYRA.

THE WAR MAY AFFECT THE GREAT SCIENTIFIC SOCIETIES OF THE WORLD.

(From *Commerce and Finance*.)

"The great scientific societies of the world are the Imperial Academy of Petrograd, the National Academy of Berlin, the Royal Academy of Sciences in Vienna, the Royal Society of London, the Institute of France and the Royal Italian Society of the Liucei. No higher honor can be given to man than membership in these bodies, for election is dependent upon doing some great service to mankind in the sphere of physics or natural sciences.

"In the broad international spirit by which they were animated the societies honored themselves by honoring great men of science in countries outside their own, by election into their bodies. Such elections were all the more distinguished because unsought. Crookes, one of England's most noted men in physics, held membership in four of these bodies; Hoff, one of the greatest chemists Germany has given to the world, held membership in all seven; so did Koch; so did Newcomb, the American astronomer, and Shiparelli, Italy's greatest astronomer. Nansen, the Norwegian explorer, was proud of membership in three of these societies; our Agassiz had membership in six.

"The Liucei is the oldest of the societies, dating back to 1603. The Royal Society of Great Britain is second, being founded in 1645; that of Germany third, in 1700; that of Russia fourth, in 1725; that of France fifth, in 1795; of Austria sixth, in 1847, and the United States seventh, in 1863.

"It is now feared by scientists that this war is greatly affecting these societies. The flame of extreme nationalism fanned by this war threatens to disrupt scientific internationalism. Correspondence has ceased, resignations of membership, caused by the alignment of the belligerents, have occurred, and it may perhaps take many years after the close of the war to revive the old scientific intercourse between members of the various nationalities."

We are prompted to copy these remarks in conjunction with

what was said in our April issue regarding the failure of the Tenth International Veterinary Congress at London in August, 1914. If it is true that the select few of these most worthy societies are carried away by the feeling of "extreme nationalism," how can we hope to see mutual esteem restored in the large international membership of such professions as those of medicine and veterinary medicine. Looked upon from the neutral standpoint, the condition described is most deplorable for the furtherance of science and professional practice. The "alignment of the belligerents" appears to favor the development of scientific sectionalism, which is bound to undermine scientific internationalism. The latter may not be reborn until the flame of national hatreds has burnt itself out slowly; until our people find out that the other people is not as bad as represented, and until the hand of concord is once more stretched out among the various nations of war-torn Europe.

O. S.

GENERAL ELEVATION OF THE PROFESSION
THROUGH IMPROVEMENT OF PRACTICE
ACTS IN SEVERAL STATES.

We have noted with no small degree of satisfaction, the universal tendency of the profession throughout the country, toward improvement of practice acts, and the evident comprehension on the part of legislators and governors, of the importance of such legislation. Reports from many states tell us of their success, not only of getting their bills through the legislature, but also of their approval by the governors of their several states; thereby putting veterinary laws of a higher standard upon the statute books. This is very satisfactory news, because the benefits of such legislation are not confined to the state in which it is enacted, but makes for a general elevation of the profession. What one state has attained some other state *can* attain through perseverance, and the general standard will gradually be raised, looking toward an ideal uniformity throughout all the states.

TICKETS TO INCLUDE LOS ANGELES AND SAN DIEGO: See correspondence, page 367.

ORIGINAL ARTICLES.

REPORT OF THE OFFICIAL TOUR OF EUROPE OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION TO ATTEND THE INTERNATIONAL VETER- INARY CONGRESS AT LONDON, 1914.

BY ADOLPH EICHHORN, WASHINGTON, D. C., AND C. J. MARSHALL,
PHILADELPHIA, PA.

(Continued from May Issue.)

VIENNA.

After boarding the train at Hegyeshalom we soon arrived in Vienna, where everyone was ready for a good night's rest after our strenuous days in Hungary.

The first place visited by our party was the Hygienic Institute of the University of Vienna. It is used principally for advanced or post-graduate work. The equipment of the laboratories in this Institute are complete and offer all the advantages to the research worker. The Institute is divided into departments of histology, pathology, bacteriology and chemistry. Different professors are in charge of each department. Many nationalities are enrolled among those doing post-graduate work at this Institute, and the subjects studied embrace all lines of medical research.

A serum institute conducted by the Government is also established in this building. The stables housing the animals used in this work are several miles away from the city, but the laboratory work is carried out at the Institute proper. The various products used in biological therapy are prepared here, and are almost exclusively marketed in Austria.

Stables are provided in the court of the Institute for the housing of the experimental animals used in the research work, and of particular interest were the rabbits infected with experimental syphilis showing the typical lesions on the scrotum.

Several lecture rooms, including a splendid amphitheater, are also provided in the Institute. The equipment of the amphitheater in particular appeared to be ideal. The arrangement for projectoscope work from a room behind the amphitheater on to a screen in the amphitheater appeared to be very practical, as in this way the operation of the machine could not distract the attention of the audience. The darkening of this hall was also accomplished through electric machinery, which controlled the heavy curtains of the numerous windows.

July 16 was devoted to a visit of the Imperial Veterinary College of Vienna. This college is an old institution, and the buildings are not of modern construction. This is also true of the hospital for both large and small animals. The impression we gained from our visit suggested that veterinary education is not nearly so highly developed in Austria as it is in Hungary. Although the preliminary education and also the curriculum comprises all the subjects which are taught in veterinary science, the facilities for the teaching and also the material and equipment of the college does not seem to be of such a high standard as in the schools of some of the other countries. The faculty includes a great number of very noted veterinary scientists who have contributed towards the advancement of veterinary science a great many important discoveries.

We visited first the Department of Hygiene, where we were met by Professor Schnürer, Director of this Department. It was especially gratifying to us to meet the professor, since it is well known that he was the first one to employ the ophthalmic mallein test for the diagnosis of glanders, and through his influence this has been accepted as the official test of Austria. The test has been applied in Austria by Professor Schnürer since 1907, and the long experience with his method of diagnosis and also the splendid control of the disease with the aid of this test seems to be sufficient evidence of the possibility of controlling the disease by means of this diagnostic agent. He considers the test reliable to about 99 per cent., while the subcutaneous mallein test failed in about 15 per cent. of cases. Glanders is now a rare

disease in Austria, and in order to have cases for demonstrations to the students it is necessary to make artificial infections of horses, whereas several years ago hardly a week passed by without having some clinical cases brought to the hospital of the College. The ophthalmic mallein test is carried out by the practitioner, and in doubtful cases blood serum is forwarded to the laboratories for the agglutination test, which constitutes the auxiliary test for glanders. The complement-fixation test, however, is considered the most accurate of all.

There are no public watering troughs for horses in Budapest or Vienna. In Vienna most drivers carry a wooden pail in which water is drawn from hydrants on the street for the purpose of watering the animals. The hydrants are equipped with a lever much like a pump handle. One can draw water by pressing down on the lever. The water stops flowing as soon as the pressure is released. This appears to be more convenient than a "squeeze" and cannot be left open, as is the case with faucets.

Many interesting cases were shown to us in the hospital for dogs. Among these were cases affected with Stuttgart's Disease; also two cases of furious rabies and several suspects. There is considerable rabies in Vienna. All dogs are supposed to wear muzzles, and from all appearances this regulation is well enforced. The diagnosis of rabies is also established by microscopic examination of the hippocampus major for the presence of Negri bodies. In negative cases guinea pigs are inoculated. In the hospital for horses all varieties of disease were represented, such as influenza, strangles, pneumonia, etc. An assistant demonstrated to us the use of the laryngoscope, which appeared to be a splendid instrument for the examination of the vocal cords, particularly with reference to roaring. In this institution, as well as in some of the German schools, the laryngoscope is frequently used in connection with the determination of results of operation upon roarers.

The use of neosalvarsan for the treatment of stable pneumonia appears to have given good results in all European veterinary hospitals. The contention is almost unanimous that

neosalvarsan is a specific against infectious pneumonia of horses. Its cost, however, is so high that its use can only be considered in the treatment of valuable animals. About \$10 is the cost of a single dose for a horse. In the physical examination of animals, for percussion, they use the hammer and pleximeter, and its use has been demonstrated to us on two horses affected with pneumonia. The phenondoscope, or stethoscope are not used on large animals, but they find them useful on small animals.

The subject of the practice of medicine is in charge of Professor Zwick, who has been connected with the Imperial Board of Health of Berlin, only recently became associated with the Veterinary College of Vienna. Professor Zwick is very well known to all who have worked with contagious abortion in cattle, as he was the first to use the biological reactions for the diagnosis of the disease, and his publications on this infection are of the greatest value to those engaged in the study of this disease. A splendid opportunity was afforded us to see specimens of rinderpest, which Professor Zwick had collected only several weeks prior to our visit, in Bulgaria. The disease made its appearance there soon after the Balkan War, and was very likely introduced into Bulgaria from Turkey. Dr. Zwick was a member of the commission sent by Austria and Hungary in order to investigate the extent of the outbreak in Bulgaria, and also to recommend measures to prevent its introduction into the dual monarchy of Austria-Hungary. This specimen was very well preserved and consisted of all the organs affected with the disease. Particularly interesting were the lesions in the buccal cavity, which are invariably associated with the disease. Photographs and colored lantern slides of rinderpest were also very interesting and instructive.

Inquiries as to the success in the treatment of contagious abortion with biological products such as vaccine and immune serum were made, and Professor Zwick told us that at the present time, from his experience and investigations, neither of these methods is satisfactory, but that it might be possible by further study to find a product with which the disease might be combated.

At the present time, however, he suggests that the control of the disease should be confined to hygienic and sanitary measures.

Lantern slides are being very extensively used in connection with the teaching at the veterinary colleges of Europe, and accordingly every veterinary college is provided with several projectoscopes to throw illustrations onto screens. The Roentgen (X-ray) apparatus is also extensively used in connection with the veterinary institutions. They found this apparatus particularly valuable in clinical work, both on small and large animals.

In the Veterinary College in Vienna, a great deal of work has recently been carried out with the coco-bacillus with reference to the destruction of grasshoppers. It is claimed that by inoculations of this bacillus the grasshoppers may be completely eradicated and the organism has not been found to be dangerous to other forms of animal life.

Part of the institution is also used for the production of biological products, particularly for the production of antitoxin against swine erysipelas which, in the European countries, is a widespread disease among swine. The serum is prepared in horses and a simultaneous vaccination is employed with good success.

There are about 1,000 students attending the Veterinary College of Vienna. The accommodations are not sufficient to take care of such a large number of students, and a new veterinary college is now being contemplated near the city limits. The increase in the number of students in the last few years is attributed to the new organization of the veterinary service by the Government; also to the fact that the school has been recently granted the right by the Emperor to confer the degree of Doctor upon its graduates which has not been the case heretofore. This, of course, elevated the profession, and a young man desiring to choose a profession readily realizes these advantages.

The party spent a very pleasing evening in company with Professors Schnürer and Zwick in one of the restaurants of the Kaizer Garden, on which occasion very valuable information was given us by these two learned gentlemen relative to veterinary science in Austria.

Sightseeing in Vienna.

One day of our stay in Vienna was devoted to sightseeing. Vienna is considered to be one of the most beautiful cities of Europe, and it is claimed by some that in monumental structures it has no rival. With the limited time at our disposal, we had to confine our sightseeing to tours through different parts of the city. For this purpose Vienna had splendid provisions. The street car system is owned by the city, and from a certain point sightseeing parlor cars are started through the most interesting parts of the city. The cars are very convenient, the appointments are very comfortable, and they are in charge of a conductor who usually explains all points of interest. Our party was fortunate to be on a car, the conductor on which had lived in the United States for several years, and therefore he was especially valuable to us. Our tour extended through the streets within the city and also outside of the city. A trip to Schoenbrun, where the Summer Palace of the Emperor is located, was much enjoyed. The gardens around the palace are considered by a good many to be the most beautiful in Europe. Sufficient time is allowed to sightseers on the cars to visit the gardens. The Winter Palace of Emperor Francis Joseph is located in Vienna, and visitors are permitted to view the interior of the palace during the absence of the Emperor. On the wonderful Ringstrasse of Vienna, a very wide boulevard, which encircles the city, are situated the most noted public buildings, such as the Parliament Buildings, City Halls, Museums and many of the noted churches. The Cathedral of St. Stephens is one of the most monumental cathedrals of Europe, and its architecture rivals the best in existence.

DRESDEN.

From Vienna our itinerary took us to Dresden. Most of this trip on the railroad is through a very interesting part of Bohemia. The country traversed on this trip took us through a very fertile country with larger fields than we had seen in other parts of the countries visited.

The distance from Vienna to Dresden is about 350 miles.

The crops appeared very good, and a great variety of farm products were being cultivated. Thus, for instance, we saw many very large fields of hops. There were no fences or farm buildings, the farmers living in villages. The work on the farm is apparently carried out by hand labor. During the entire trip we did not see a single farm machine in use. The people were mowing and cutting grain, some with sickles and others with a peculiar-looking cradle attached to the sickles, but no reapers were in sight. There were very few horses, but many oxen were working on the farms. In one instance we saw a man plowing with a horse and an oxen hitched together. The horses we saw in the cities, and also in the country, appeared to be in very good condition. They were mostly of the Belgian type, and were good representatives of that breed.

Throughout the different countries we traversed we observed a great amount of work being done by women, both on the farms and in the cities. In Vienna, for instance, we noted women as hod carriers, mixers of mortar, street sweepers, section hands on the railroad, and also the largest part of the produce for the city markets is brought in by women, in heavy baskets.

Shortly before reaching the German border the train entered the valley of the Elbe River, which was followed all the way to Dresden. The city of Dresden is situated on both sides of the Elbe. The valley presented to us magnificent natural scenery. On both sides hills of varying heights, covered with different kinds of pine trees, afforded a very pleasing view. Neat villages and small cities with red tile roofs and the substantial construction of the buildings indicated the prosperity of the inhabitants. The numerous smoke stacks throughout this section suggested the industrial development of this part of Germany, which was also suggested by the numerous freight barges seen on the Elbe.

Our first day in Dresden, it being Sunday, was devoted principally to sightseeing. The morning was spent in the visit of the Art Gallery, the Royal Palace and a carriage ride through the city. The Art Gallery, known as the Zwinger, rivals the best in Europe, and by some it is considered as ranking with the Louvre

of Paris. It certainly contains one of the finest collections of pictures in the world. Possibly the finest picture in the world is to be seen here, the "Sistine Madonna," by Raphael, for which Augustus paid \$45,000 one hundred and sixty years ago, for truly it is a wonderful picture. It represents an altar-piece, and is in a room by itself. I think that those who know nothing whatever about a painting would be compelled to admire this wonderful work of art. Of most paintings one can get a fairly good idea from the reproductions, but we have never seen any reproductions of this picture which did it credit. Raphael depicts the Virgin with the Child in her arms standing in a cloud. At her feet kneels Pope Sextus on one side, with St. Barbara on the other. The Madonna's eyes are cast down, apparently at the two charming cherubs, familiarly known as Raphael's Angels. Of the other noted pictures in the gallery which may be mentioned is Corrighio's "Holy Night," which represents one of the greatest works of this artist. There are many fine Dutch paintings in the gallery. Those dealing with the village and peasant life are especially interesting. For instance, there are three men, one by the name of Tenier, another Brauwer and another one, Van Onstad, who painted the Dutch peasants as they danced and ate or drank or played cards. It is very pleasing to see these jovial faces in the rich colors as they were depicted by the artist.

In this gallery, as is usual in every European gallery, Rubens has many large paintings. Of the modern paintings, the pictures of Hoffman are unusually fine. His painting of the boy Christ is no doubt one of the greatest masterpieces in existence. The painting is known as "Christ in the Temple."

Most of the noted buildings of Dresden are located near the River Elbe, within a space of two or three blocks. Besides the Art Gallery, there is the Royal Opera House, the Royal Chapel, the Royal Palace, the State House Building and the Academy of Arts, while on the other side of the river are the buildings containing the Royal Library, the different departments of the Government, such as the War, Treasury and Justice Departments. A fine bridge, known as the Augustus, spans the river.

The city of Dresden, while a great industrial and commercial center, is one of the cleanest and neatest places we saw, and an observer cannot fail but admire its beauty. It is therefore not at all surprising that so many Americans who desire to study abroad select this city for their field of labor. The territory surrounding Dresden is also beautiful, and within very short distances one reaches the most magnificent scenic landscapes of the Saxonian Alps.

A trip on the Elbe to the Summer Palace of the King of Saxony was also very interesting, affording us a beautiful view of the banks of the Elbe and also the very picturesque towns and numerous villas decorating the surrounding hills. The Gardens of the Royal Summer Palace offered the most gorgeous beds of flowers, arranged very artistically.

A reception with tea, by Consul General, Mr. Leo Allen Bergholz, given in honor of our party, was the crowning feature of our first day's stay in Dresden. The tea, served in the Gardens of the Hotel Bellevue on the bank of the Elbe, the gorgeous effect in the garden, and the view of the River, made this place one of the finest we had ever seen. The hospitality on the part of the Consul General and his sister and mother made us feel very much at home, and the evening was thoroughly enjoyed by all. Later in the evening the party visited some of the very interesting cafés of Dresden, one in particular of which was greatly admired by us, it being known architecturally as the finest in the world.

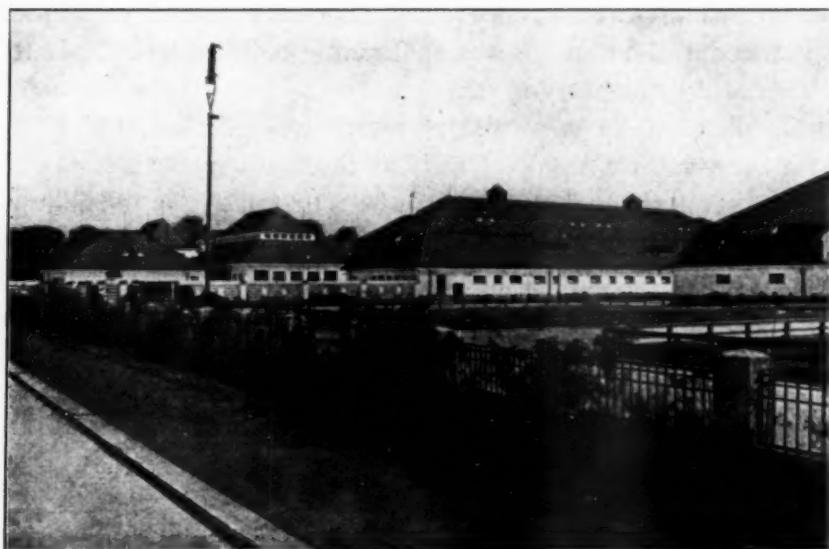
A very strenuous program had been arranged for the following day, and the members were urged to retire early in order to feel fully refreshed for the six o'clock start to visit the public abattoir and stock yards of Dresden. By appointment we met Dr. Angermann, the Director of the Abattoir, at six o'clock at the Administration Building of the establishment. After a hearty greeting the Director proceeded with a short lecture on the history of the establishment and its construction, which was followed by a tour through the entire plant.

The present abattoir and stock yards of the city of Dresden were constructed in 1910 at a cost of 16,000,000 marks. This

does not include the cost of the ground, which was reclaimed by the city from an inundated area of the Elbe River. Upon approaching the plant one thinks that he is about to enter "Spotless



View of Municipal Abattoir and Slaughter Houses, Dresden, Germany.



Municipal Abattoir, Dresden, Germany.

Town." Beautiful buildings of very harmonious type of architecture with well-paved streets and spotless cleanliness characterize this very large establishment.

The Director, who is a veterinarian and who has twenty veterinarian assistants and eighty laymen to assist in the inspection work, escorted us throughout our tour.

The buildings are complete in every respect. They are constructed of stone, granite, cement and tile. The roofs are of tile. The yards and floors are either of cement or vitrified brick in about two-inch squares. All troughs for handling products are made of granite, while the mangers, feed troughs, etc., are of tile. The pens are iron, with a very convenient patent gate which



Refrigerator Plant and Machinery Building, Dresden, Germany.

opens either way, so as to close or open an alley or pen, as the case may require. The entire plant covers about fifty acres. One wonders how all details could have been worked out so perfectly. The stock yards and slaughter houses are separate. All stock is subjected to an examination by a veterinarian when unloaded. If any transmissible disease is thus discovered, all animals of that lot are loaded back onto the car and sent to the Sanitary Slaughter House. The hogs are given a bath before they enter the stable, and they appear as clean as if they had been scalded and scraped.

There are two market days each week, and all the business must be transacted at this time. All animals are inspected by a



Market Hall for Large Animals, Dresden, Germany, Municipal Stock Yards and Abattoir.



Market Hall for Hogs, Dresden, Germany.

veterinarian, and a second time when they are brought from the stable to the market. All shipments from foreign countries are handled in separate stables. The animals are purchased by live weight and all business is transacted through a bank located in the yard. Frequently more than a million dollars' worth of stock is handled in the four hours which constitutes the time for the dealing allowed on the market days.



Market Hall for Small Animals, Stock Yards, Dresden, Germany.

The Market Halls are very large covered buildings, provided with skylights and side windows. The floor is divided by iron railings into different pens, and each pen has feed and watering troughs. All the large animals are tied in the pens. A six-foot wall separates the stock yards from the abattoirs and, corresponding to the Market Hall Buildings for the various species of animals in the same line on the other side of the wall, are located the abattoirs for the slaughter of the different species of animals. Thus, there are separate buildings for the killing of cattle, hogs, sheep and calves. About 3,000 head of cattle, 2,000

head of sheep and 4,000 hogs are killed each week. About 1,500 horses and 100 dogs are killed annually for human food.

All cement, iron and granite work is rounded and so con-



Feeding Stalls for Cattle. Enclosures for Shipment. Dresden, Germany.

structed that cleaning can be done thoroughly. After the day's killing the floors are flushed and scrubbed thoroughly so that no evidence of dirt is left and all odor eliminated from the establish-



Waiting Station for Hogs, Dresden, Germany.

ment. The coolers are connected by covered alleys with the abattoir. The coolers are divided into small compartments, which are rented to the butchers. The floor in these separate rooms is



Interior View of Cattle Abattoir, Dresden, Germany.



Abattoir for Hogs. Scraping Off the Bristles. Dresden, Germany.

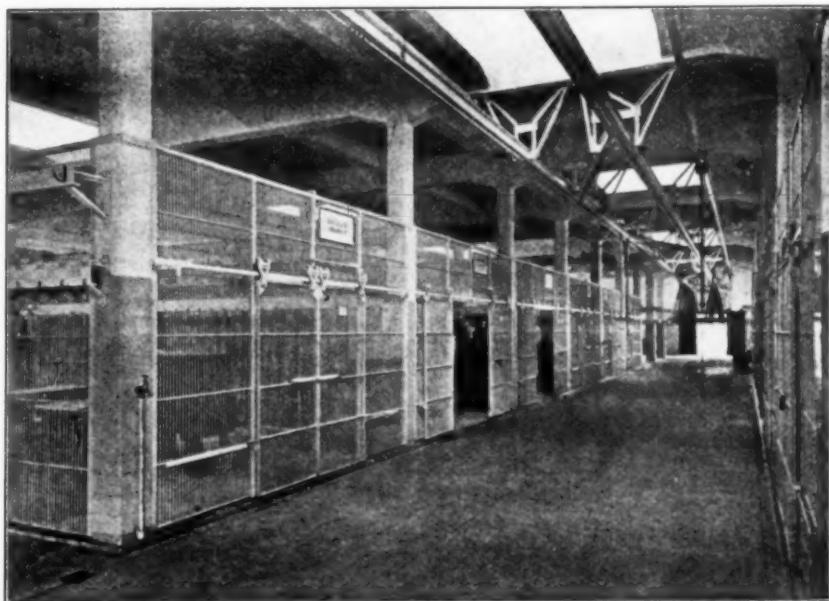
slightly elevated above the alleys, in order to avoid the carrying in of dirt. All the iron work in the coolers is painted white enamel. Each tenant is required to keep his own rented space clean. About \$10 per year is the charge for a square yard, which constitutes a section. The temperature of the cooler is about 1° C. The main office is provided with a temperature regulator by which the Director can press a button and see the temperature of any cooler at any time.

The slaughtering is almost exclusively carried out by the retail butchers, who provide the stock they kill. They are entitled

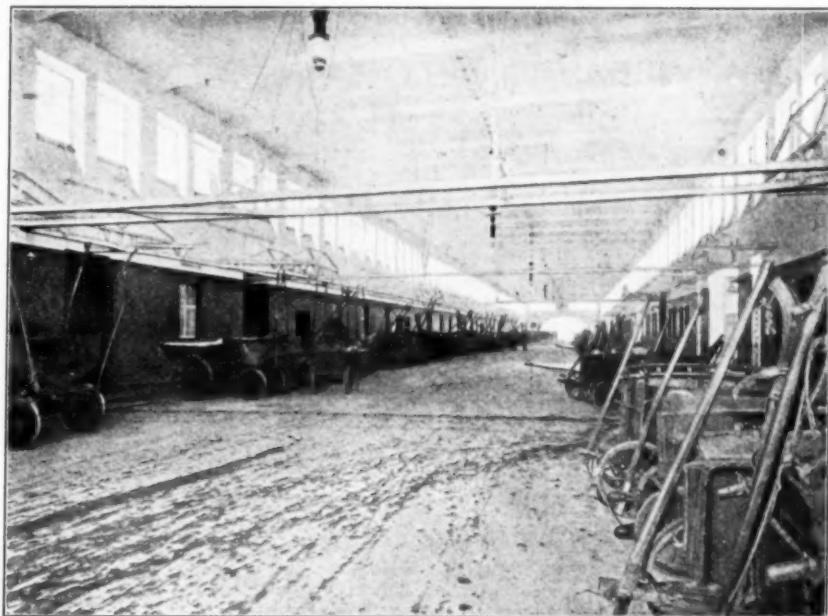


Cattle Abattoir, Dresden, Germany.

to all the offal except the hair. Any offal that is not wanted by the butcher is cared for by the management of the abattoir. A splendid system for taking care of the gastro-intestinal contents is established in this and other modern plants in Germany. The contents are taken by carts from the tripe room to an elevated platform in a spacious building from which they are dumped into a railroad car and taken to the tankage plant, which is about one



Salesroom for Cattle, Dresden, Germany.



Connecting Hall, Dresden, Germany.

hour's distance from the stock yards. The skins and feet are taken to a separate building and are being utilized by a private concern. All dead and condemned animals and parts are taken to the rendering plant.

The Director has a nicely equipped laboratory, which contains a fine collection of normal and pathogenic specimens and also a very nice collection of drugs prepared from animal tissues. A collection of transparent specimens of tissues was especially inter-



Unloading Pens, Stock Yards, Dresden, Germany.

esting to us. In these specimens various organs were rendered transparent by a special process of preparation which is very complicated. The entire body of a small animal may be rendered transparent; also the wall of intestines, disclosing the injected blood vessels and their connections with the tissues in a very striking manner.

The market opens at eight o'clock in the morning, the time being indicated by the blowing of a whistle. The feeding of the stock is also carried out at a certain time. The animals are

stunned before bleeding with a bolt and a wooden mallet. The bolt cuts the skull and penetrates the brain about four inches. A reed is then inserted through the hole in the skull and some distance into the cervical vertebra. The floors, troughs, benches and everything is saturated with water before the killing commences. This is undertaken in order to make cleaning more easily accomplished after the killing is over. A great deal of straw is used in hog pens to keep them clean. The hogs are



Cattle Abattoir, Dresden, Germany.

marked with aniline dyes for identification. Cattle are marked on the hip with curved scissors. The hogs are knocked down with a round mallet, and are then stuck and the blood caught into pans.

The hog is then rolled into a scalding tub and taken out at the proper time on to a table with the aid of an electric appliance. They are scraped, hung up on rails and eviscerated. The trolleys and tracks are very convenient. The carcass can be turned around by a single movement of a lever.

After the sales are over for a day the prices are compiled and published. At each killing bed there is a metal box with a revolving drum into which condemned organs are placed and from which they cannot be removed except by the inspector.

Tuberculosis is found in about 40 per cent. of dairy cattle, 30 per cent. of oxen, 20 per cent. of steers and 6 per cent. of hogs. The abattoir charges for the handling of animals, which includes all expenses incurred between the shipping and cooling:

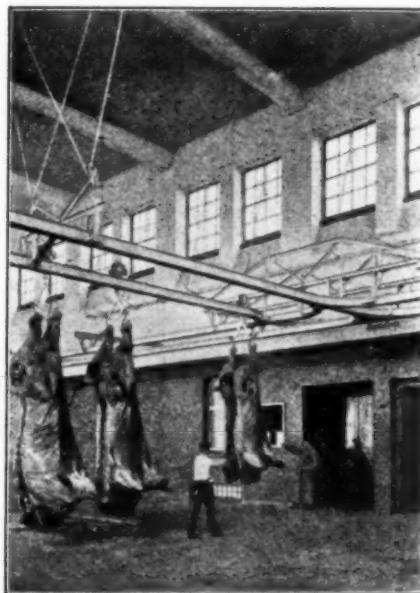


Cattle on Elevator in Preliminary Cooler,
Dresden, Germany.

For cattle, \$1.50; for hogs, \$1; for calves 40 cents, and for sheep 25 cents per head. These charges are sufficient to pay all expenses of maintaining the establishment and also the interest on the investment.

The inspection of the carcasses is very minute, and the disposition is governed by the rules and regulations of the Imperial Laws. A special sanitary abattoir is provided for the disposition of the retained and condemned carcasses, and this also serves for the sterilization of the meat which is conditionally passed and

sold at the Freibank. In connection with the sanitary abattoir there is a well equipped laboratory for conducting the work in bacteriological meat inspection and also feeding tests on small laboratory animals. A splendid collection of pathological specimens in this laboratory has been acquired in the course of the inspection.



Cattle on Elevator in Connecting Hall,
Dresden, Germany.

This abattoir is without a doubt the finest in the world, and is conducted in the most sanitary manner possible. Even the tripe rooms are immaculate, and no odor emanates from any part of the establishment. Our reception at the stock yards was very cordial, and we were greatly indebted to the Director for the courtesy shown us.

(To be Continued in Our Next Issue.)

THE HORSE IN ALL CIVILIZATIONS: See Congressman Sherwood's address on page 386.

A PRELIMINARY REPORT ON THE INVESTIGATION INTO EQUINE ABORTION EXISTING IN THE PROVINCE OF ONTARIO.*

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The objects of this investigation were to determine the following important questions:

First. Was the abortion occurring amongst the mares in certain parts of the Province true contagious abortion, the result of an infection with a specific organism?

Second. If contagious abortion what were the factors involved in the spreading of it from one district to another?

Third. How can the disease once established be controlled and finally eradicated?

As many tests are now available for use in the diagnosis of disease the first question was answered in the most convincing way without much difficulty. The other two important problems are far from being definitely solved, but I believe that sufficient evidence has been obtained to be of material value in controlling this disease.

Before entering into a detailed discussion of the work a brief description of the disease may be of value to the reader unfamiliar with contagious abortion.

ABORTION: CONTAGIOUS AND SPORADIC.—By abortion is meant the premature expulsion from the uterus of the foetus and its membranes. Colts born before their time but viable are considered as premature births. Abortion not infrequently occurs among all domestic animals.

However, it is very important to remember that in both the equine and bovine species there are two distinct types of abortion, one contagious and due to a specific organism differing with the animal species, the other non-contagious and resulting from various non-specific causes such as ergotism, injury and during

* Reprinted from a pamphlet published by authority of Minister of Agriculture, Ontario, Can.

the course of some infectious diseases; in fact anything that profoundly disturbs the system. The non-transmissible type of abortion is of little significance in comparison to the contagious variety considered in this investigation.

SYMPTOMS OF CONTAGIOUS ABORTION.—These in many cases are entirely lacking. Generally speaking the more advanced the pregnancy the more pronounced are the symptoms both before and after abortion. The prodromal symptoms unfortunately rarely are specific; colic pains, restlessness and occasional straining may be noticed. These in a pregnant mare should always be regarded with suspicion. The vulva is frequently swollen and a mucous discharge present. Immediately prior to the act of abortion all symptoms become more evident.

The discharge which follows is generally very typical, being chocolate-brown in color, fairly fluid, containing numerous small flaky particles. The odor is also very typical and offensive. The foetal membranes are unfortunately inclined to remain intact, which may necessitate their artificial removal. Common sequelae are metritis and leucorrhœa. The mortality is not high, but the animals affected frequently lose in flesh and become unthrifty.

The foetus, if alive when aborted, does not as a rule live long; those surviving undoubtedly have an inherent tendency to septic arthritis. The appearance of an aborted foetus externally is normal, but on post-mortem examination evidences of inflammation and other changes in various internal organs, such as the spleen, liver, lungs and testicles in a male animal, are revealed. The lymphatic glands throughout are frequently enlarged and inflamed.

A BRIEF HISTORICAL SKETCH.—The earliest appearance of the disease on this continent was in 1886, when it became for a time a serious menace to the horse-breeding industry of the Mississippi Valley. The first endeavor to determine the cause of the disease was made by Theobald Smith,* who published in 1893 the results of his investigation into an outbreak occurring in Pennsylvania. It is most likely that the organism isolated by

* United States Bureau of Animal Industry, Bulletin No. 3, 1893.

him at that time was the one since demonstrated to be the cause of contagious equine abortion. From that date until the present time many continental workers, notably deJong, Dassonville and Rivière† have isolated organisms, which seem to be very closely related to the one described by Smith, and with these organisms in certain cases have successfully produced abortion in pregnant mares. The most complete work in regard to the etiology of the disease has been accomplished quite recently by two American bacteriologists, Good‡ and Meyers§ both working independently, but undoubtedly isolating the same organism and obtaining very similar results. Their investigations into the etiology of the disease were more complete than our own, but their conclusions in regard to mode of transmission are based on rather meagre data, while ours have a much stronger basis, as will be observed in the discussion on the question.

As to the occurrence of the disease in the Dominion of Canada no reliable information has been obtained. The first outbreak of the disease brought to my notice occurred in the spring of 1913. Later, I learned that the disease had occurred during the spring of 1912. During the fall of 1913 and the spring of 1914 cases were reported from the previous localities, and also from certain hitherto uninfected districts. Veterinary surgeons and stock breeders residing in these districts state that the disease was never known previous to the present outbreaks.

With this brief survey of the disease I will proceed to describe the work recently undertaken and endeavor to answer the questions previously enumerated.

DOES CONTAGIOUS EQUINE ABORTION EXIST IN THE PROVINCE?—The very fact that numbers of mares had aborted in certain localities made one strongly suspicious that a specific infection was responsible. It must not be forgotten that abortion may be concomitant with certain infectious diseases; this is notably the case in some outbreaks of influenza. Also the pres-

† *Revue générale de Médecine Vétérinaire*, xxi., Nos. 245 and 246, 1913.

‡ Kentucky Agricultural Experimental Station, No. 165, 1912.

§ Meyers, *Journal of Medical Research*, Vol. xxix., Dec., 1913.

ence of ergot in the food may produce similar results. Both of these conditions were looked for and found to be absent.

To prove that the cases resulted from a specific infection was the task to be accomplished. In solving this the following tests may be applied to cases under investigation:

- (1) The isolation of an organism from most cases of the disease, and by animal experiments proving its specificity for producing that disease. This may be applied if no organism has been previously described as the causative agent.
- (2) By demonstrating the presence of the recognized cause when such exists.
- (3) By demonstrating the presence of specific reactionary bodies in the tissues or body fluids of the infected animals.

Some few months previous to this investigation Good and also Meyers had each discovered an organism which they believed to be the cause of contagious equine abortion. Undoubtedly the same organism had been discovered by both and named the *Bacillus Abortivus Equinus* by Good. A fact of considerable interest is that previous to Good's publication I had isolated an organism that proved to be the *bacillus abortivus equinus* from the joints and blood of foals suffering from septic arthritis. Only after Good's publication did I realize the possible etiological significance of this organism in contagious equine abortion.

In most of our cases the opportunity for isolating the specific organism was not allowed, as we rarely saw the mares until days or weeks subsequent to their abortion. It will be noticed later in the report that when the opportunity was available the organism was recovered.

Before commencing the investigation I had thoroughly tested the organism isolated from the diseased colts with a known strain of the *bacillus abortivus equinus* obtained through the kindness of Prof. Good, and satisfied myself that the two were identical. Thus at the commencement we know that the organism described by Good as the cause of contagious abortion had been isolated from diseased foals born in a district where later cases of abortion occurred. Why should not the cause of abortion in both Canadian and American mares be identical? Believing this to be the

case our first object was to isolate the *bacillus abortivus equinus* from cases of abortion, or by satisfactory tests to demonstrate the presence of specific antibodies in the blood of mares that had aborted.

ISOLATION OF THE BACILLUS ABORTIVUS EQUINUS.—As the investigation only started when the frequent abortions of fall and spring had abated, the opportunity for isolating the causative organism correspondingly diminished. Vaginal swabs were taken in all cases of recent abortion, and cultured out on plain and gentian-violet agar; also dextrose broth was inoculated, to which had been added the same bacterial inhibitant. In both broth and agar the gentian-violet was used in the strength of 1 in 50,000 to 1 in 100,000. This was found quite sufficient to check the growth of most gram-positive organisms, while not preventing the growth of the gram-negative *bacillus abortivus equinus*. Experiments were made using various strengths of malachite-green in agar, but the results were not as promising as those obtained from gentian-violet which was adhered to throughout the investigation. The table given later shows that in only the most recent cases of abortion the *bacillus abortivus equinus* was isolated by this means. The results of serum reactions will satisfy the possible criticism that perhaps the mares were never specifically infected. Failure to isolate this organism would tend to show that the infection rapidly clears up, but one must remember that a negative result from a vaginal swab would not necessarily mean a total absence of uterine infection. Up to the present time we have not had the opportunity to make a series of cultures at uniform intervals from the uterus after abortion. Alteration in the culture media and methods of isolation might produce more satisfactory results. This point requires further investigation.

As cases Nos. 50 and 56 were the only two recent cases that we had the opportunity of observing it will be of interest to briefly describe them.

Case No. 50.—This occurred in a five year old mare during her first pregnancy. The mare had aborted twenty-four hours

previous to my visit. She appeared very depressed, was breathing rapidly, pulse 90, temperature 105 degrees F. Exploration of the uterus revealed the cause for the high temperature and pulse rate, there being at least a quart of foetid brown fluid present, absorption from which was causing the toxæmia. A sample of blood was taken from the jugular vein and dextrose broth inoculated. A tube of blood was taken for a complement fixation test, and also a swab from the uterine exudate. The blood culture on incubation remained sterile, and strangely both the fixation and agglutination tests were negative. Such reactions are interesting, but difficult to explain. It might be mentioned here that the reaction had changed to a very pronounced positive in both tests made one month later. (See Case No. 81.)

From the uterine discharge the *bacillus abortivus equinus* was isolated. This organism predominated very markedly over the other organisms present, viz., colon, staphlococci and streptococci. Cultures from the foetus were not to be obtained, as the same had been buried.

Case No. 56.—This mare had carried her foetus full time, and was expected to foal in a day or two. The foal, although apparently normal when born, survived for only a few hours. Post-mortem examination showed the internal organs apparently normal, with the exception of the spleen, which was enlarged, and the testicles, which were very much enlarged and haemorrhagic. The lymphatic glands were inflamed and enlarged. Cultures were made from all internal organs which later showed uniform infection with the *bacillus abortivus equinus*. From the stomach a mixed culture was obtained, while the small intestine, which was full of meconium, gave a pure culture. This may have been due to the inhibitive action of the bile. The dam seemed perfectly well, but from the uterus the typical chocolate colored fluid was being discharged. From this was recovered the *bacillus abortivus equinus*.

Thus the *bacillus abortivus equinus*, the recognized cause (in the United States) of contagious equine abortion, has been recovered from the uterine discharge of two mares that had recently aborted. As these were the only two cases investigated immediately at the time of abortion the results are very satisfac-

tory. The proof that the organisms isolated were the *bacillus abortivus equinus* were based on cultural characteristics and serum reactions. (See article on "The Etiology of Pyemic Arthritis in foals" in the Journal of Infectious Diseases, Vol. 15, No. 2, Sept., 1914, pp. 409-416).*

DEMONSTRATION OF CONTAGIOUS EQUINE ABORTION BY MEANS OF SPECIFIC SERUM REACTIONS.—With the results previously recorded one might consider the question as to whether the disease contagious equine abortion existed or not was satisfactorily answered, making further work unnecessary. Had the investigation now ceased the extent of the disease would not have been ascertained, and our knowledge limited to the results obtained in cases No. 50 and 56. By carrying the investigation into other districts we have, by the tests now to be described, clearly shown the cause to be the same in nearly all the cases investigated.

Two tests which form previous experiments were known to be satisfactory were decided upon, *i.e.*, the complement-filtration and agglutination tests.

Specificity in reaction is the criterion by which these, as well as other biological tests, stand or fall. That is, a positive reaction or one interpreted to mean past or present infection must only result when the blood serum of the diseased animal is brought in contact with the causative organism. If the reaction as used in the test can be produced by the blood of healthy animals or animals suffering from other diseases it is at once shown to be non-specific and useless. Before attempting to understand the mechanism of any serum test, however simple, the following law should be carefully read: "When an animal or man is injected with a soluble protein the tissues react to the substance injected producing specific bodies (antibodies) which are capable of neutralizing the protein injected and are in excess of it." The dose must, of course, be non-lethal. Thus, when an animal becomes infected certain proteins are liberated in the tissues by the infecting organism. These stimulate the animal economy, which responds by producing specific counter-substances (anti-

* Will be published in a future issue of REVIEW.

bodies). All serum tests depend upon the presence and identification of these specific antibodies.

The following illustration will show what is meant by specificity of reaction, and how it is utilized in the diagnosis of disease. An animal is thought to be infected with one of the two diseases—tuberculosis or glanders. A sample of blood is obtained, and the serum in suitable dilutions is added to a suspension of glanders bacilli in a test-tube. If no reaction occurs in the tube we presume that there was nothing present in the blood capable of reacting with the glanders organism and producing some change, such as precipitation of the suspended bacilli. We therefore presume the animal to be free from the disease glanders. At the same time the serum of a known glandered animal manipulated in a similar manner causes a pronounced precipitation of the suspension of glanders organisms. Blood serum derived from a known healthy animal and used simultaneously in a test gives a negative result, *i.e.*, no change in the test-fluid.

To test the blood of this same animal for tuberculosis, the tubercle bacilli are substituted for the glanders bacilli, and suitable dilutions of the blood serum made. This time the tubercle bacilli are thrown out of suspension, collecting at the bottom of the tube, *i.e.*, a positive reaction. A control tube containing normal blood serum is unaltered while a second control containing the serum of an animal known to be infected is similar in appearance to the suspect. Thus we see that the blood serum of an animal infected with tuberculosis reacts only with the organism causing tuberculosis, or in other words reacts specifically. As a result of the infection with tubercle bacilli something has been developed in the animal economy that will react with the organism causing tuberculosis when given the opportunity. No reaction took place when the glanders bacilli were used, because the animal economy had never become infected with this disease. The reactions, whether occurring in the body or in a test-tube are always specific.

As will be seen later the agglutination test is unusually suitable for the diagnosis of the disease, and a few words describing the test will make it intelligible to the lay reader. By agglu-

tination is meant the clumping together of bodies, organic or inorganic, that previously had a discrete or separate arrangement.

This phenomenon was discovered several years ago by Grubler and Widal. Their investigations showed that when an animal was experimentally or naturally infected with an organism "X" the blood serum of an animal so infected when added to the infecting organism would produce a change in their previous arrangement, clumps being formed by the coming together of isolated organisms. It must be mentioned that the concentrated or weakly diluted blood serum of most animals will cause a limited amount of agglutination with most of the bacilli, or rod-shaped organisms. This normal agglutination is avoided by using the serum in high enough dilution to obviate such error.

Briefly, the test was performed as follows: Equal quantities (2 c.c.) of a suspension of the *bacillus abortivus equinus* in normal saline were placed in a number of test tubes. Then to each tube was added a definite small amount of the blood serum of the animal suspected to be infected with the bacillus of contagious equine abortion. When properly done each tube would represent a different dilution of the blood serum, usually from 1 in 40 to 1 in 1,000. The tubes were then incubated at 37 degrees C. for three hours and then placed in the ice-chest for another period of twelve hours when the results of the tests were determined. The blood serums from normal mares were always tested at the same time for controls.

THE COMPLEMENT-FIXATION TEST.*—It is almost impossible to describe this test in a way that can be readily grasped by one unfamiliar with serological diagnosis, without entering into a wearying amount of detail. The test is based on the principle that when the fresh blood serum of an immunized or naturally infected animal is brought in contact either *in vitro* or *in vivo* with the immunizing body, a reaction occurs between the two into which that constituent of the blood serum known as complement enters and is fixed. The test consists of two parts. In the first complement is given the opportunity to become fixed; the

* For technique of complement-fixation test, see *Etiology of Pyaemic Arthritis—Schofield, Journal of Infectious Diseases, Vol. XV., pages 409-416.*

second part of the test is to demonstrate whether or not the fixation of complement occurred. This test to be of any value must be specific, that is, when a reaction is obtained indicating the presence of the disease in the blood of an animal under investigation, we must have enough confidence in the test to consider that the animal in question is, or has been, infected with this disease and no other. When properly manipulated the test has given eminently satisfactory results, and is considered the most accurate serum reaction that can be used in the diagnosis of disease. To ensure specificity of reaction suitable controls must always be employed. Our work, as will be seen by the tables, was carefully controlled by the use of normal horse serum whenever a test with suspected serum was being made. Also two organisms, differing from the tested organism yet closely allied to it, were used in the test to fully prove that the reaction occurring was specific. As will be seen by studying the tables, fixation of complement only occurred with the *bacillus abortivus equinus* and not with an allied strain, viz., the *bacillus coli communis*. It is also interesting to note the absence of fixation with a closely related organism, the *bacillus cholera suis*. Further than this, the strains of the *bacillus abortivus equinus* received from Professor Good were used, and the results with these were the same as with our own strain.

Fixation of complement indicates that the blood came from an animal that was or had been infected with the organism with which fixation occurred.

The samples of blood were obtained by bleeding from the jugular vein with a large hypodermic needle and collecting in a sterile test-tube. Frequently some diplomacy had to be used before the farmer would allow such a harmless operation.

The table which is appended contains, with the agglutination and fixation tests, the most important data obtained during the investigation. From this data the answers to the other important questions are derived.

Many points of interest are brought out in this table, but only those bearing directly upon the previous discussion will be mentioned here.

First.—All the districts in which abortions have occurred and in which samples of blood have been taken reveal the fact that the abortions in the majority of cases were due to the *bacillus abortivus equinus*.

Second.—That the agglutination and complement-fixation reactions parallel each other with great accuracy. In almost all cases of fixation the agglutination titre is high and *vice-versa*. However, a combination of both should be employed to ensure greater accuracy. In most cases where the reaction failed to show up the abortion had occurred many weeks and occasionally months previously.

Third.—Omitting the cases in group "B" it will be noticed that between 70 and 80 per cent. of the abortions occurred during the last month of pregnancy.

Fourth.—Nos. 83, 52, 57, 33 and 92 are very interesting cases. These mares had not aborted and were apparently healthy, yet they gave positive fixation reactions. These cases will be discussed later on in the paper.

Fifth.—The cases in group "C" seem to point directly to the influence of the sire, *i.e.*, seven of fifteen mares were bred to the same horse.

Sixth.—As before mentioned the specificity of reaction is closely shown, no positive results being recorded when other organisms such as the colon bacillus or the bacillus cholera suis were changed for the *bacillus abortivus equinus*. The parallel reactions with Good's strain and my own confirm previous work as to the similarity of these organisms. (See cases Nos. 33 to 49.)

Seventh.—Antibodies may still be found in the blood-serum of a mare as late as seven months after the abortion. (See case No. 25.)

The first question asked in this investigation, *i.e.*, whether contagious equine abortion exists in the Province, has been satisfactorily answered, also the relationship of the *bacillus abortivus equinus* and contagious equine abortion as existing in this Province established.

No. of Sample	Locality	Owner	Description of Case.	Date of Abortion.	Days ahead of full time.	Sample of blood taken.	Results of Agglutination Test, dilutions made in normal saline.					
							1 40	1 80	1 100	1 200	1 300	1 400
1	Jno. M.	Mare which had aborted.	May 5, 1914 Ap 1 30, ".	12	May 11, 1914	Negative	—	—	—	—	—	—
2	"	Normal mares in same stable.	2	38	18, 44	—	—	—	—	—	—	—
3	Eli R.	Mare which had aborted.	O.K.	75	18, 44	—	—	—	—	—	—	—
4	"	"	"	30	18, 44	—	—	—	—	—	—	—
5	"	"	"	44	18, 44	—	—	—	—	—	—	—
6	"	Normal gelding.	"	18	18, 44	—	—	—	—	—	—	—
7	"	"	"	18	18, 44	—	—	—	—	—	—	—
8	"	Normal gelding.	"	18	18, 44	—	—	—	—	—	—	—
9	"	One year old filly.	3	18	18, 44	—	—	—	—	—	—	—
10	A	Mare which had aborted.	3	60	18, 44	—	—	—	—	—	—	—
11	G. H.	Mare which had aborted.	3	60	18, 44	—	—	—	—	—	—	—
12	"	Normal mare on same farm.	"	60	18, 44	—	—	—	—	—	—	—
13	R. M. C. A.	Mare which had aborted.	4	60	18, 44	—	—	—	—	—	—	—
14	"	Normal mare on same farm.	"	60	18, 44	—	—	—	—	—	—	—
15	"	Normal gelding.	"	60	18, 44	—	—	—	—	—	—	—
16	"	"	"	60	18, 44	—	—	—	—	—	—	—
17	R. J. R.	Normal gelding.	"	60	18, 44	—	—	—	—	—	—	—
18	"	"	"	60	18, 44	—	—	—	—	—	—	—
19	"	"	"	60	18, 44	—	—	—	—	—	—	—
20	H. S.	Mare which had aborted.	5	Feb. 15, 1914	98	Negative	—	—	—	—	—	—
21	C. K.	"	6	10, 3	14, 44	—	—	—	—	—	—	—
22	"	"	7	90	14, 44	—	—	—	—	—	—	—
23	Jno. C.	"	7	67	14, 44	—	—	—	—	—	—	—
24	"	"	8	210	14, 44	—	—	—	—	—	—	—
25	B	"	7	210	14, 44	—	—	—	—	—	—	—
26	A. J. H.	"	9	68	14, 44	—	—	—	—	—	—	—
27	A. T.	"	10	60	14, 44	—	—	—	—	—	—	—
28	Jos. B.	Normal mare on same farm.	7	41	14, 44	—	—	—	—	—	—	—
29	Ira. S.	Mare which had aborted.	11	125	14, 44	—	—	—	—	—	—	—
30	"	Normal mare.	"	125	14, 44	—	—	—	—	—	—	—
31	Livery.	Normal gelding.	"	125	14, 44	—	—	—	—	—	—	—
32	"	"	"	125	14, 44	—	—	—	—	—	—	—
33	H. B.	Apparently normal mare.	12	May 1, 1914	4 days over time	Negative	—	—	—	—	—	—
34	C. B.	Mare which had aborted.	12	Ap 1 13, "	34	—	—	—	—	—	—	—
35	R. N. D.	"	"	"	2, 44	—	—	—	—	—	—	—
36	"	"	"	"	2, 44	—	—	—	—	—	—	—
37	E. B.	"	"	"	2, 44	—	—	—	—	—	—	—
38	C	"	"	"	2, 44	—	—	—	—	—	—	—
39	H. H.	"	"	"	2, 44	—	—	—	—	—	—	—
40	C. L.	"	"	"	2, 44	—	—	—	—	—	—	—
41	"	"	"	"	2, 44	—	—	—	—	—	—	—
42	C. G.	"	"	"	2, 44	—	—	—	—	—	—	—
43	C. D.	"	"	"	2, 44	—	—	—	—	—	—	—
44	R. T.	"	"	"	2, 44	—	—	—	—	—	—	—
45	"	"	"	"	2, 44	—	—	—	—	—	—	—

+ = Presence of good reaction.

— = Absence of positive reaction.

No. of Sample.	Locality.	Owner.	Description of Case.	Results of Fixation Tests.				Remarks.
				Bacillus Equinus.	Bacillus Cholera Suis.	Bacillus Communis.	B. Abortivs (Good).	
1	Jno. M.		Mare which had aborted	++	++	++	++	Not done
2	"	"	Normal mares in same stable	++	++	++	++	++
3	Eli R.		Mare which had aborted	++	++	++	++	++
4	"	"	"	++	++	++	++	++
5	"	"	Normal gelding	++	++	++	++	++
6	"	"	"	++	++	++	++	++
7	"	"	Normal gelding	++	++	++	++	++
8	"	"	"	++	++	++	++	++
9	"	"	Normal mare	++	++	++	++	++
10	A	G. H.	One year old filly	++	++	++	++	++
11	"	"	Mare which had aborted	++	++	++	++	++
12	"	"	"	++	++	++	++	++
13	"	"	Normal mare on same farm	++	++	++	++	++
14	R. McA.		Mare which had aborted	++	++	++	++	++
15	"	"	"	++	++	++	++	++
16	"	"	Normal mare on same farm	++	++	++	++	++
17	R. J. R.		Normal gelding	++	++	++	++	++
18	"	"	"	++	++	++	++	++
19	"	"	Normal mare	++	++	++	++	++
20	H. S.		Mare which had aborted	+++++	+++++	+++++	+++++	Not done
21	"	"	"	++	++	++	++	++
22	C. K.		"	++	++	++	++	++
23	"	"	"	++	++	++	++	++
24	Jno. C.		"	++	++	++	++	++
25	B	A. J. H.	"	++	++	++	++	++
26	"	A. T.	"	++	++	++	++	++
27	"	Jos. B.	"	++	++	++	++	++
28	"	Ira S.	"	++	++	++	++	++
29	"	"	Normal mare on same farm	++	++	++	++	++
30	Livery		Mare which had aborted	++	++	++	++	++
31	"	"	"	++	++	++	++	++
32	"	"	Normal mare	++	++	++	++	++
33	H. B.		Apparently normal mare	+	+	+	+	+
34	C. B. D.		Mare which had aborted	+++++	+++++	+++++	+++++	+
35	R. N. D.		"	++	++	++	++	++
36	"	"	"	++	++	++	++	++
37	C	E. B.	"	++	++	++	++	++
38	"	"	"	++	++	++	++	++
39	"	H. H.	"	++	++	++	++	++
40	"	C. L.	"	++	++	++	++	++
41	"	"	"	++	++	++	++	++
42	C. G.		"	++	++	++	++	++
43	L. D.		"	++	++	++	++	++
44	R. T.		"	++	++	++	++	++

Results of Agglutination Tests, dilutions made in normal saline.

Agglutination of *Brucella abortus* suspensions.

Days

1 2 3 4 5 6 7 8 9 10

The irregularity in these results is due to the late date of testing after collection. Collected May 11-18, 1914. Tested June 2nd, 1914. Many samples had become infected.

Agglutination + $\frac{1}{4000}$
Agglutination + $\frac{1}{2000}$
Agglutination + $\frac{1}{1000}$

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No. of Sample	Owner	Locality	Description of Case.	Date of Abortion.	Days ahead of full time.	Sample of blood taken.	Result of Vaginal Swabs.	Results of Agglutination + to 1/1000		
								1	1	1
44	L. D.	45	Parameters of sexual reaction.	.....	.....	.....	.....	—	—	—
46	C. S.	47	R. T. E. G.	Mare which had aborted	May 22, 1914	79	May 24, 1914	—	—	—
48	C.	49	Stallion . . . . .	.....	.....	.....	.....	—	—	—
50	Geo. D.	51	Mare had aborted	May 22, 1914	79	May 24, 1914	Positive	—	—	—
52	Jno. D.	53	Normal mare had joint ill foal	May 22, 1914	79	May 24, 1914	Positive	—	—	—
54	Jno. T.	55	Mare that had aborted	May 1, 1914	14	May 24, 1914	Positive	—	—	—
56	W. M.	57	Mare had aborted 24 hours previously	May 1, 1914	14	May 24, 1914	Positive	—	—	—
58	B. C.	59	Mare had aborted 24 hours previously	May 1, 1914	14	May 24, 1914	Positive	—	—	—
60	J. H.	61	Normal mare, in foal	May 1, 1914	14	May 24, 1914	Positive	—	—	—
62	W. K.	63	Second year she had aborted	May 1, 1914	14	May 24, 1914	Positive	—	—	—
64	W. K.	65	Aborted one year ago (foesse)	May 1, 1914	14	May 24, 1914	Positive	—	—	—
66	W. T.	67	Normal mare (foyle)	May 1, 1914	14	May 24, 1914	Positive	—	—	—
68	MCC.	69	Normal mare had stillborn foal	May 1, 1914	14	May 24, 1914	Positive	—	—	—
70	H.	71	Mare that had aborted	May 1, 1914	14	May 24, 1914	Positive	—	—	—
72	H.	73	Normal mare, not pregnant	May 1, 1914	14	May 24, 1914	Positive	—	—	—
74	H.	75	Normal mare, pregnant	May 1, 1914	14	May 24, 1914	Positive	—	—	—
76	T. H.	77	never pregnant	May 1, 1914	14	May 24, 1914	Positive	—	—	—
78	R.	79	Mare that had aborted	May 1, 1914	14	May 24, 1914	Positive	—	—	—
80	T.	81	Mare that had aborted	May 1, 1914	14	May 24, 1914	Positive	—	—	—
82	Geo. D.	83	Gelding in next stall	May 1, 1914	14	May 24, 1914	Positive	—	—	—
84	H.	85	Normal mare, colt died of joint ill	May 1, 1914	14	May 24, 1914	Positive	—	—	—
86	S. B.	87	Normal mare, colt died of joint ill	May 1, 1914	14	May 24, 1914	Positive	—	—	—
88	F. D.	89	Colt died of joint ill	May 1, 1914	14	May 24, 1914	Positive	—	—	—
90	S. C.	91	Colt died of joint ill	May 1, 1914	14	May 24, 1914	Positive	—	—	—
92	W. H. D.	93	Colt died of joint ill	May 1, 1914	14	May 24, 1914	Positive	—	—	—
	W. J. B.									

+ = Presence of good reaction.

— = Doubtful reaction.

— = Absence of positive reaction.

No. of Sample.	Locality.	Owner.	Description of Case.	Results of Fixation Tests.				Remarks.
				Bacillus Abortivus Equinus.	Bacillus Cholera Suis.	Bacillus Coli Communis.	B. Abortivus (Good).	
46	C.	C. S.	Mare which had aborted	—	—	—	—	
47	C.	E. G.	Stallion	+	—	—	—	
48				—	—	—	—	
49								
50	D.	Geo. D.	Mare had aborted 24 hours previously	—	—	—	—	
51		Jno. D.	Mare had aborted	—	—	—	—	
52		“	Normal mare had joint ill foal	—	—	—	—	
53		“	Normal mare in same stable	—	—	—	—	
54		“	Mare that had aborted	—	—	—	—	
55	D.	W. M.	Mare had aborted 24 hours previously	—	—	—	—	
57	D.	B. C.	Normal mare, in foal	—	—	—	—	
58		“	Second year she had aborted	—	—	—	—	
59		“	Aborted one year ago (Jesse)	—	—	—	—	
60		“	“ (Lady)	—	—	—	—	
61		“	Normal mare (Fly)	—	—	—	—	
62		J. H.	Mare that had aborted	—	—	—	—	
63		W. K.	Mare that had aborted No. 5	—	—	—	—	
64		“	No. 6	—	—	—	—	
65		“	Normal mare, same farm, No. 7	—	—	—	—	
66		“	No. 8	—	—	—	—	
67		W. T.	Normal mare, foal died, joint ill	—	—	—	—	
68		“	Normal mare had stillborn foal	—	—	—	—	
69		McC.	Mare that had aborted	—	—	—	—	
70		“	Normal mare, not pregnant	—	—	—	—	
71		H.	Mare that had aborted	—	—	—	—	
72		“	Normal mare, pregnant	—	—	—	—	
73		“	“ never pregnant	—	—	—	—	
74		“	“ “ “ “ “	—	—	—	—	
75	E.	T. H.	Mare that had aborted	—	—	—	—	
76		“	Normal mare not pregnant	—	—	—	—	
77		R.	Mare that had aborted	—	—	—	—	
78		“	“	—	—	—	—	
79		“	“	—	—	—	—	
80		T.	“	—	—	—	—	
81		Geo. D.	“	—	—	—	—	
82		H.	Gelding in next stall	—	—	—	—	
83		H.	Normal mare, colt died of joint ill	—	—	—	—	
84		S. B.	“	—	—	—	—	
85		F. D.	“	—	—	—	—	
86		S. C.	“	—	—	—	—	
87		W. H. D.	“	—	—	—	—	
88		W. J. B.	“	—	—	—	—	
89		“	“	—	—	—	—	
90		“	“	—	—	—	—	
91		H.	“	—	—	—	—	colt died of joint ill

(Concluded in July Issue.)

INTERNAL SECRETION OF PANCREAS.

By C. C. PALMER, D.V.M., PHYSIOLOGIST, EXPERIMENT STATION, UNIVERSITY FARM, ST. PAUL, MINN.

Physiological Anatomy.—The pancreas is a compound tubular gland. It is surrounded by a connective tissue capsule which gives off trabeculae, which pass into the gland and divide it into lobules.

In some animals, as for example, the cat, these lobules are well defined, while in others they are less distinct. The gland has a main excretory duct, the pancreatic duct (Wirsung). In many cases there is also a secondary excretory duct, the accessory pancreatic duct (duct of Santorini). Both open into the duodenum.

The terminal tubules themselves are most of them very short, frequently almost spherical. This and the fact that several terminal tubules are given off from the end of each intermediate tubule have led to the description of these tubules as alveoli, and the pancreas as a tubulo-alveolar gland, although there is no dilation of the lumen. The cells lining the terminal tubules are irregularly conical epithelium. The appearance of these cells depends upon their functional condition.

During the resting state the cells contain numerous granules, known as zymogen granules. During the early stages of activity (intestinal digestion) the granules largely disappear. During the height of digestion the granules are increased in number to such an extent that they almost fill the cell, while after prolonged secretion they are again almost absent. The cell now returns to the resting state. The increase and disappearance of the granules are marked by the appearance of the fluid secretion of the gland in the lumen. It would thus seem probable that the zymogen granules are the intracellular representatives of the external secretion of the gland.

The pancreas also contains peculiar groups of cells, the cell-

islands of Langerhans. The "island" cells differ quite markedly both in arrangement and structure from those which line the terminal tubules. They contain no zymogen granules. They are arranged in anastomosing cords or strands, which are separated from one another by capillaries. There are no ducts. Their nuclei vary greatly in size, some especially where the cells are closely packed, being small, others being large. Some of the islands are quite sharply outlined by delicate fibrils of connective tissue containing a few elastic fibres. Others blend with the surrounding tissues.

This close relation of cells and capillaries, and the absence of any ducts, first led to the hypothesis that these cells furnish an internal secretion which passes directly into the blood vessels.

The origin of the islands of Langerhans is a question which is not definitely settled. Modern writers may be divided into two chief groups, according to their views as to the morphological significance of the islands.

The first of these believe that the islands are developed from the same tissue which gives rise to the ordinary glandular elements of the pancreas.

The second group of observers regard the structures in question as definite and distinct organs, analogous to the cortex of the adrenal, the epithelial part of the pituitary body, and the parathyroids, and consider that they have no connection with the secreting tubules of the pancreas.

Experimental evidence seems to favor the first view. Swale Vincent and Mrs. Thompson were the first to prove experimentally that the islands of Langerhans actually pass through a structural cycle, corresponding to a cycle of changes in physiological conditions. They were able to provoke experimentally the formation of new islands at the expense of the exocrine parenchyma, and then to induce their disappearance by a new transformation into tubules.

Laguesse working with the pigeon has quite recently been able to confirm the results of Vincent and Mrs. Thompson.

However, it is a fact now well established that the islands of Langerhans have a function of their own, namely, producing an internal secretion, and the most reasonable conclusions seem to be that the islands of Langerhans are closely related to the secreting tubules with regard to origin, but have a function which is in no way related.

The islands of Langerhans are constant features not only of the mammalian pancreas; but of birds, reptiles and amphibians as well. It is stated by Piersol that their distribution throughout the pancreas is by no means uniform, since, although about equally numerous in the head (anterior) or adjacent part of the body, they may be almost double in number towards the tail (posterior).

The blood vessels supplying the pancreas enter and leave with the main duct. The arteries entering the gland break up into smaller arteries which accompany the smaller ducts. These end in a capillary network among the secreting tubules. From this, venous radicles arise which converge to form larger veins.

The nerves are almost wholly derived from the sympathetic system. They pass to plexuses among the secreting tubules to which and to the wall of the vessels they send delicate terminal fibrils.

Extirpation.—Pancreatectomy leads to a fatal diabetes in all animals except some birds (accessory islands of Langerhans being present in the intestinal mucosa). These facts have been well established since 1889. Previous to that time complete pancreatectomy was thought to be impossible.

Sugar appears in the urine 6-8 hours after complete pancreatectomy. Reaches the maximum on the 2d or 3d day. It then falls again and maintains a constant level. Just before death it may disappear entirely. The percentage of sugar found in the urine varies from 2 or 3 to as high as 10 or 12 per cent., depending upon the length of time following the operation.

One of the most striking symptoms of the diabetes mellitus induced in dogs by the complete removal of the pancreas is the

voracity which the animals exhibit, especially during the terminal stages of the disease. Reduced to mere skeletons of their former selves by a rapid and progressive emaciation, their dry skin bearing indolent ulcers resulting from slight scratches, with eyes almost closed with a purulent conjunctival discharge, such animals will eat ravenously. In this extreme cachectic condition which precedes their death, when they are entirely indifferent to their surroundings and lie in their cages almost too weak to rise, they will liven up at the sight and smell of food and will muster up all their strength in an endeavor to get at the food and devour it. It is, therefore, not uncommon to find their stomach at autopsy filled with food ingested but a few hours previously. Such dogs have been known to eat their own feces even when provided with food which for a normal animal would be an abundant day's ration.

A similar polyphagia has been described in man occurring occasionally during the course of diabetes mellitus.

This polyphagia in pancreatic diabetes has been shown by Dr. Luckhardt of the University of Chicago to be due to true hunger pains brought on by real hunger contractions.

Other symptoms such as great thirst, polyurea and gastrointestinal disturbances are noted. There is incomplete fatty digestion and diarrhoea occurs.

Such animals are very susceptible to infection. The laparotomy wound following complete pancreatectomy does not heal. This fact is noticed in the human suffering from diabetes mellitus that slight scratches easily become infected and are quite difficult to heal.

The symptoms of pancreatic diabetes in dogs are identical with those of diabetes mellitus in man with one exception. In man during the later stages of the disease the breath has a peculiar acid odor, which is due to acetone bodies in the blood, this symptom has not been observed in dogs.

Dogs usually live 3-4 weeks following complete pancreatectomy, death resulting from complete exhaustion.

Organ-therapy.—Feeding of the gland tissue or extracts

have yielded no results. Some workers have claimed results (overcoming the diabetes) by intravenous injections of certain isolated products of the gland. These results have not been generally confirmed.

Cause of Pancreatic Diabetes.—1. It was first thought that pancreatectomy caused diabetes because the external secretion was removed. This has been disproven by ligating or plugging the ducts and no diabetes resulting, also by transplanting a portion of the pancreas into another portion of the body and in every case where the graft took, diabetes did not result. When the pancreas is sectioned, and studied by means of the microscope following plugging or ligating of the ducts, the secreting tubules are noticed to have atrophied, but the islands of Langerhans are quite normal.

2. Pfluger stated, "that extirpation of the duodenum or separation of the duodenum from the pancreas the blood supply of the gland being left intact has the same effect." Pfluger's theory is known as the neurogenic theory or duodenal diabetes theory. He criticises the internal secretion theory and substitutes for it a theory according to which there exist nerve centres, stimulation of which determine the production of sugar, and then centres of an antagonistic nature determining an internal secretion of the pancreas, which internal secretion hinders the production of sugar. In removing the pancreas these centres are necessarily damaged, and the same happens in extirpation of the duodenum or separation of the duodenum from the pancreas.

But here again this theory is easily disproven by making a transplant, or by removing the entire duodenum and allowing the pancreas to remain, does not result in diabetes.

3. *Detoxication Theory.*—The pancreas destroys diabetic producing substances. When the pancreas is removed these poisons are not destroyed and as a result diabetes occurs. Some workers have isolated these so-called diabetic producing substances; but later work has demonstrated their presence occurring in other conditions, namely, starvation, and a diabetic animal is a starving animal.

4. An internal secretion formed by the islands of Langerhans. This theory was first proposed in 1893, since this time evidence has been rapidly accumulating which confirms this theory. Such evidence may be summed up as follows:

1. Ligation of the pancreatic ducts causes an atrophy of the secretory cells, but not the islands.

2. Pancreatic grafts wherever made retain the cells of the islands, but the secretory cells atrophy. When this graft or transplant is removed the animal dies of diabetes.

3. In pregnant animals diabetes is not as severe as in non-pregnant, because the islands in the foetus are functioning. Total extirpation of the pancreas then in the pregnant female does not produce a fatal diabetes, but shortly after parturition the mother succumbs to diabetes.

4. A method of transfusion by symbiosis has been successfully carried out. Two pups of the same litter are placed under the influence of a general anaesthetic. The abdominal cavity of each dog was opened, and the two peritoneal cavities were sutured together making one cavity, then the muscular coats were united and finally the skin. Thus we have two dogs, with their abdominal cavities communicating, through which diffusion of the blood will take place. To demonstrate that transfusion is going on from one animal into the other, potassium iodine when given to one animal can be found in the urine of the other dog as well as in the urine of the animal which received the potassium iodine. The pancreas of one of these twins can then be removed, and neither dog will show any symptoms of diabetes. However, when the pancreas of the other twin is removed fatal diabetes results.

This experiment shows that the internal secretion of the pancreas of one animal can readily pass to the other by transfusion.

5. This internal secretion has also been demonstrated in the blood of normal animals. The whole blood of a normal animal when injected into a diabetic animal there results in the diabetic animal a diminution in the output of sugar for 36-48

hours. If, however, blood from a diabetic dog is used for the injection, rather than normal blood, the output of sugar is not changed.

If fresh normal blood is allowed to stand for two hours in the ice box then injected into a diabetic animal no decrease in the sugar output occurs. It was also noted that satisfactory results are not obtained when defibrinated blood or lymph are used.

6. In a large number of cases of diabetes mellitus in the human. The islands have been found to be affected with hyaline degeneration. There resulting an impairment in the function of the islands, lessening the amount of internal secretion, and diabetes resulting.

It is not the purpose of this paper to discuss diabetes mellitus in the human, but it is interesting to mention some of the results obtained by Dr. Allen, of the Rockefeller Institute, in his study of experimental pancreatic diabetes in dogs compared to diabetes mellitus in man. His latest work was reported in a paper, which he read before the American Medical Association, June, 1914.

A brief review of Dr. Allen's work is as follows:

Production of Experimental Diabetes.—Removal of larger or smaller fractions of the dog's pancreas produces a corresponding lowering of the sugar tolerance. Removing .9 results in severe diabetes. When the remnant is larger (*e. g.*, $\frac{1}{8}$) milder types result.

In the production of experimental diabetes dogs and cats give the best satisfaction. The cachexial type being more common in cats. In cats removal of fractions such as 3-4 to 4-5 or 5-6 mild or severe types are produced as desired, and such cats live for weeks or months. Intermittent types of glycosuria can be produced in cats and dogs which do little or no harm and determined largely by diet. This is similar to the mild intermittent, relatively harmless types seen in the human.

Removal of sufficiently large fractions of the pancreas. The animals spontaneously develop a severe diabetes and show heavy glycosuria on meat diet and also during considerable periods of

fasting. The condition progresses steadily downward to a fatal end.

When the remnant of pancreas left *in situ* is slightly larger a condition may be produced in which the fate depends on the diet. On meat feeding the dog is free from glycosuria and remains so for months, eating his fill every day and maintaining full health and nutrition. But subcutaneous tests show that dextrose tolerance is very low, and bread feeding readily produces glycosuria. A return to meat stops the glycosuria. But if bread diet and glycosuria are maintained for too long a time the glycosuria then continues even on meat feeding.

If a still larger remnant is left the animal may remain in excellent condition on bread diet and free from glycosuria. But if sufficient sugar is added to the diet glycosuria can be produced and maintained. After such a period of glycosuria, the animal reaches a condition in which it is glycosuric on bread diet and finally severe diabetes, with glycosuria on meat diet.

If a still larger remnant remains, sugar feeding may produce transitory glycosuria, but it cannot be made to continue. The sugar tolerance is lower than in normal dogs, but nevertheless the doses of sugar necessary to produce glycosuria are higher than can be tolerated as a daily routine of the gastro-intestinal tract. Persistence in the attempt to maintain glycosuria causes diarrhoea and illness. Dogs refuse to eat, sugar via stomach tube is vomited, and true diabetes is absent. Similar results were obtained in cats by feeding carbohydrate in the form of milk.

Allen states that characteristic changes in the islands are present whether the diabetes is the result of simple operation or the result of diet in predisposed animals (removal of a part of the pancreas). And when diabetes is prevented by a diet in predisposed animals the degenerative changes in the islands are absent.

The functional strength of the pancreas differs in individuals. In persons with weak pancreas, diabetes comes on early in life, irrespective of diet. In some persons as in predisposed dogs,

where weak function is present an excess of sugar brings on the diabetes. Luxurious living and sedentary life aggravate these effects of carbohydrates. This explains the increase of diabetes parallel to the increase of sugar consumption in civilized countries. No normal animal can be made diabetic by any amount of carbohydrate diet; if too much sweet or starch food is given indigestion results. Thus it is conceivable that persons with weak pancreatic function are sometimes saved from diabetes by a weak digestive function.

The normal arrangement is that a man can assimilate more carbohydrate than he can digest and absorb, and the reflex symptoms of breakdown of the digestive function compel the abandonment of improper diet before there is any danger of breakdown of the assimilative function, which depends upon the internal secretion of the pancreas. Diabetes is then a question of balance between the digestive and assimilative functions. Pancreatic weakness may reverse the normal relation, so that the organism can digest and absorb more carbohydrate than it can combine and assimilate, and in this condition the production of diabetes by improper diet is possible.

In pancreatic diabetes the body loses its capacity to store sugar and the ability to burn sugar. Allen states that this disturbance of carbohydrate metabolism in diabetes is due to the fact that in the normal body the sugar exists in a combined form, which is lacking in diabetes. The combining substance was designated as "amboceptor" (binds tissues and sugar) and furnished by the islands of Langerhans.

The fragment of pancreas which barely prevents diabetes is the smallest fragment which can supply the minimum quantity of ambocepta necessary for the animal metabolism.

TREATMENT.

1. Treatment of animals made diabetic by operation.—If the remnant is small, diabetes may be so severe that fasting will not produce sugar freedom. When the fragment is larger and glycosuria is present even on meat diet and will end fatally if

allowed to persist; a few days fasting at the onset will produce sugar freedom. If the diabetes is allowed to continue longer so that the functional power of the pancreas is weakened by degenerative changes in the pancreas (islands) then several weeks are necessary to obtain sugar freedom, or it may be impossible to obtain it. After sugar freedom (pancreatic function has become equal to its burden) is thus obtained and the animal is not too exhausted it is advantageous to fast the animal several days longer so that the pancreatic function may recuperate with rest and a small reserve of amboceptors be accumulated by the body. Feeding with protein and fat and occasionally bone is then begun very cautiously, several times daily. Only enough is given to maintain the animal in its thin condition. Under such conditions dogs remain free of diabetes. If attempt is made to increase the weight in such an animal glycosuria soon appears and must be checked by several days of fasting. One dog possessing less than $1/10$ of the pancreas had been kept free from diabetes for six months and it looks like he can be kept free indefinitely. Such dogs, though thin, are vigorous and lively. If fed all they will eat even on meat diet they appear at first much better nourished but finally emaciate, become thin, weak, cachectic and die.

Allen concludes that if .9 of the pancreas is gone and cannot be replaced, the remaining .1 suffices to preserve life on a basis of reduced weight and metabolism.

2. Treatment of animals made diabetic by operation and diet.—If the animal possess $1/8$ or $1/6$ of the pancreas they are not diabetic after the operation, but made so by the diet, when fed excess of carbohydrate. This diabetes can at first be stopped by simple change in diet. But after long duration the diabetes no longer stops on carbohydrate free diet, but requires several days or weeks of fasting, according to its severity. When sugar freedom is obtained the procedure is the same as with animals of the former group. But the prognosis is more favorable and the diet can be gradually increased and in favorable cases the animal can be brought to a higher level of weight and nutrition.

and may bring the animal back to full weight and by careful feeding prevent glycosuria. However the longer the animal is allowed to go untreated (on full mixed diet) the less favorable is the prognosis. But even in these cases Allen has succeeded in bringing such dogs back to nearly normal in body appearance.

In human medicine the same principles have been carried out. But in man the prognosis is more favorable than in the experimental dogs, because in these dogs most of the gland is hopelessly gone. On the contrary, in typical human diabetes the entire pancreas is present and there are indications that the disorder is essentially functional. For this reason the hope of recovery and the degree of recovery is superior in man to experimental animals.

NEW VETERINARY LAW IN NEBRASKA.—The law regulating the practice of veterinary medicine was so changed by the last legislature as to prohibit the use of the title by those who have not passed an examination. It allows men who are not graduates and who have made the practice of veterinary medicine their principal business for ten years to continue to practice without using the title of any degree conferred by a veterinary college or university, provided such person shall before September 1, 1915, file an affidavit, supported by ten resident freeholders of his county that he has made the practice of veterinary medicine his principal business for ten years immediately preceding the taking effect of this act.

Under the new law the board may revoke a veterinary license for the following causes: Fraud or deception in applying for license, or in passing examination; failure to file his certificate, or a copy of same with the county clerk of his home county; conviction of fraud or misdemeanor involving moral turpitude; habitual intemperance in the use of intoxicants, etc.; issuing certificates or bills of health without authority, or issuing false certificates of inspection or bills of health; offering fraudulent remedies for sale, or prescribing, administering or preparing same; and various other causes.

All veterinary surgeons now in the state must file a true copy of the license issued them with the county clerk or such license can be revoked.—(McCook, Neb., *Tribune*, May 13, 1915.)

COLOR INHERITANCE IN THE HORSE.*

BY E. N. WENTWORTH, AMES, IOWA.

While laboratory animals have yielded very nicely to the study of their inheritance of color, the horse still remains a mystery in many of the phases of coat transmission. Hurst and Bunsow have recognized chestnut with the sorrel and liver shades as a true recessive and Hurst has shown black to be epistatic to this reddish pigment. Bays and browns have been with difficulty separated, but have been considered as epistatic to both colors mentioned, while grays and roans seem dominant to the entire series of color. One difficulty which seems to have beset all investigators up to the present time, with the exception of Dr. Walther, is the tendency to arrange all colors as an epistatic and hypostatic series, expecting them, then, to conform to the simple laws of presence and absence. That this attempt has been a real stumbling block the writer hopes to show, by means of his arrangement of factors in a manner slightly similar to Walther's and Sturtevant's methods, but differing in the factors themselves.

THE PIGMENTS IN THE EQUINE COAT.

A microscopic examination and simple chemical tests reveal only two pigments in the coat of the ordinary horse. These seem to correspond to the red or yellow and the black pigments found in rodents. There is quite evidently a lack of chocolate or else such a close linkage of the brown and black pigments that they are not readily separable.

Under both the low and high power red pigment granules may be discerned in the sorrel, chestnut, bay or red roan hairs. The granules are sharply distinct and typical in form, but there seems also to be a diffuse red, slightly lighter in tinge, distributed quite evenly throughout the cortical layer. This is entirely sepa-

* Reprinted from the *Journal of the U. S. Cavalry Association*.

rate from the effects of spherical aberration, and is quite evidently a basal ground pigment found in all but white or albino hairs.

Black pigment granules rather larger, coarser and more frequently clustered appear in the black horse. They are so numerous and typical that they quite obscure the red ground pigment.

Quantitative differences appear in the amount of pigment in the hair, intense and dilute conditions being readily recognizable. The effects of age and sun are quite noticeable also, fading usually being produced, as in some cases the black hair loses its black pigment almost entirely and give the rusty black so common in Percherons and general work horses.

THE INHERITANCE OF THE RED PIGMENT.

Hurst and Bunsow have shown that chestnut breeds true. The figures in the table, taken from various sources*, show that out of 1,610 matings all but sixteen are chestnut. This is a deviation from a pure recessive of one per cent., but since it has been shown that the average stud book contains two per cent. of errors, this one per cent. may be readily credited to that. It will be noticed that the variates are six bays and ten blacks. Bay is the common color of a colt at birth and a rusty black is nearly as frequent. Since many colts are recorded at from one to three months of age and since the natal coat is not shed usually until the foal is twelve weeks old errors here are not unexpected.

The black pigment seems more complicated in nature. Four hundred and six individuals show it to be forty-one without when black is mated to black and two hundred bear it to one hundred and eight without when black is mated to chestnut. Since most of the individuals in the black by black matings are from the Percheron breed in which there are a large number of homozygous blacks the small ratio of chestnut segregates is not surprising. The fifteen bays from the black by black mating are unexpected. Eleven of these come from Sturtevant's records. He offers the possibility of error by explaining it on the

* The Government Gray Draft Horse Experiment at Ames, Pedigree and study of actual animals by the writer, Sturtevant's, Wilson's and Anderson's papers principally, with isolated cases from the agricultural press.

ground of error in the natal coat, on the difficulty of distinguishing dark browns from blacks in the parents and by other means. These seem sufficient to the writer to permit disregarding them since he found none in his studies on actual individuals (i. e. some 100 in number). Sturtevant and the other investigators are disturbed by the high per cent. of bays from the black by chestnut mating, but this is probably due to the idea of bay held by them. It fits the writer's hypothesis perfectly. The factors so far considered may be lettered as Sturtevant has done, "c" for the chestnut ground pigment and "h" for the black pigment (Hurst's factor).

BAYS AND BROWNS.

Bay and brown are distinguished with difficulty by each of the investigators and by most practical men. On this account the writer has made no attempt to separate them, but has lumped such records together.

Bay is a restriction factor, which will be called "b," that limits the development of the black pigment to the eye, mane, tail, lower limbs and the extremities in general.* It can operate only in the presence of factor "h," black pigment. Brown probably differs from bay in having the dapple pattern combined with the restriction factor "b." This permits some black to appear where the dapples are located and gives a darker appearance. This idea would suit the microscopic as well as visual evidence since brown differs from bay in the presence of black hairs. Most writers have considered brown dominant to bay, a condition which would suit the above theory, since the dappling pattern is apparently dominant.

Bay to bay gives 5,273 bay, 274 black and 672 chestnut. This varies quite a little from the expected 9:3:4 ratio. However, the bays are very largely (all but about 500) from the American Saddle Horse and Standard Bred Records, and bay has been the dominating color among them for seventy-five years. The deficiency in blacks may be accounted for by their lack of

* Black pigment is also present in the skin of the bay horse. It furnishes one basis for the superficial distinction of bay and chestnut coats, claimed possible by some.

popularity.* Bay to black and to chestnut gives qualitatively similar results as would be expected, but there is a lower percentage of bays and a higher percentage of blacks in one case and chestnuts in the other than would be expected.

The high per cent. of bays in the offspring of blacks to chestnuts has been non-conformable to previous theories. The restriction factor "b" does not appear somatically except in the presence of "h" black pigment. Theoretically three-fourths of the chestnuts ought to carry this restriction factor, so that the mating of these to blacks should always supply bays. From this standpoint there is a deficiency rather than an excess of bays.

THE DUNS.

Duns are little known. Their numbers are few and they may be grouped into at least three kinds. The ordinary buck-skin with black extremities is probably a dilute bay, the yellowish dun a dilute chestnut and the cream colored with light mane and tail, a dilute sorrel with the yellow extremities, factor "m."

Since the records do not separate them they will not be dealt with further. Factor "i," the dilution factor, is probably epistatic to all but gray and roan.

THE GRAYS.

Gray is recognized as a separate factor by all writers. There seems some question as to whether it can operate in the absence of "h," black pigment, but Sturtevant presents evidence to show that it does. It is dominant, to all factors previously named, dappling "d" and restriction "b" excepted, and varies from a deep iron gray in young stock to the white or flea-bitten gray of the older animal.

It is a simple factor since animals heterozygous for it produce fifty per cent. grays and fifty per cent. other colors. Dr. L. J. Cole, of the University of Wisconsin, has told the writer in private communication that one of his students has totalled the

* This would prevent recording of black animals.

offspring of grays in the Clydesdale studbook and has obtained exactly fifty per cent. of each of grays and other colors. The Clydesdale breeders have objected to grays and have always bred their gray mares to other stock in order to reduce the chances of its appearance. Gray stallions since 1831 have nearly all been castrated. This has resulted in all the grays being heterozygous.

Sturtevant shows 400 gray to 428 not gray for the heterozygous condition in one sex, while he exhibits forty-five gray to fifteen not gray where both parents are heterozygous.

Gray is characterized by an intermingling of pigmented with non-pigmented hairs, usually associated with dappling. It seems possible that gray must be a combination of dappling and the roan factor, although the above evidence indicates that it is a unit in action.

THE ROAN PATTERN.

Roan seems dominant to all the other colors and is apparently a pattern entirely independent of the kind of pigment. Two kinds of roan exists visually, strawberry or red roan, and blue roan. These probably correspond to bays and blacks plus the roan pattern. It seems possible that there also exists a chestnut roan, in fact they are apparently quite common, for roans with red pigmented manes and tails instead of black are seen frequently. Such a roan would probably be the type produced by the mating of blue roan to blue roan shown in the table. If the black factor were heterozygous in both sexes, the chestnut roan would result.

Roan differs from gray in lacking the dappling common to gray and in possessing quantitatively a much larger number of pigmented hairs. It has seemed to the writer that gray may be a combination of the roan, dappling and dilution factors coupled together in some way, but since from the present evidence that would necessitate considering gray epistatic to roan and since this latter is manifestly untrue it is best to consider them as separate factors.

Roan is epistatic to the entire series of factors as may be

shown from the three following records. One a roan Belgian stallion owned at a small town in Iowa (the name and address are lost) sired 254 colts, of which 230 were red roan and 24 blue roan, these colts coming from all colors of mares. The second a roan Belgian stallion which stood for two years in northwest Warren County, Iowa, sired 112 red roans, 7 blue roans and 6 chestnuts, from mares of various coats. The third, also a Belgian owned in Marshall County, Ill., sired about half roan colts and the other half grays, blacks, bays, browns and sorrels. His owner states that his sire was blue roan, his dam was bay, his second dam was chestnut and his dam's sire brown.*

SPOTTING.

Spotting varies in type, but may receive at least two classifications. The white stockings on the legs and blazed face typical of the English breeds, Shire, Clydesdale, Hackney, Thoroughbred and allied breeds, seems to be inherited as a distinct kind of spotting, although it fluctuates very markedly in amount of white. The "blaze" may become as small as the typical star in the forehead or may cover more than half the head. The stockings may extend well up to the elbow or stifle or may be restricted to the foot.

Dr. Walther recognizes another type of spotting, Schabrackenscheckung or saddle cloth marking and its recessive absence of same. He finds it also inherited as a distinct unit, although fluctuating in its limits. It is a spreading of white over the back, sides and croup, and down on to the legs. It is dominant and may appear with any color so far discussed. It is apparently what the horse breeder calls piebald or skewbald or what the average person calls a "calico" horse.

Albinos are uncommon, but extreme spotting with blue eyes (glass eyes) are frequently seen.

* Since the above records were prepared an instance has been discovered of a roan Belgian stallion in southeast Story County, Iowa, that has sired 256 red roan colts to the exclusion of other colors.

THE REDUCTION OF PIGMENT IN MANE AND TAIL.

Yellow manes and tails on sorrels and cream colored extremities on duns are very common. They are apparently recessive, since one chestnut mare, Bessie, at the Iowa State College, has produced eight chestnut colts, six with manes the same color as the body, two with the yellow mane. Another chestnut mare known as the "half-hackney" bred qualitatively the same producing two colts of the first class and one of the second. Four chestnut manes with yellow mane mated to three different chestnut stallions with yellow manes produced thirteen foals with yellow manes. The summary of data on this is appended.

	Chestnut stallions without yellow manes.	Chestnut stallions with yellow manes.
Chestnut mares with yellow manes.....	25 without 6 with	13 with
Chestnut mares without yellow manes.....	17 without 2 with	19 without 3 with

This shows it apparently to be recessive. A cream-colored mare with light mane and tail produced three dun colts with black extremities when crossed to a bay. This would fit the above hypothesis, although it throws no light on it.

THE DILUTION FACTOR.

The dilution factor "i" is apparently dominant. Mouse is a dilute form of black and three matings of mouse to black have given two mouse colored and one black. The mouse colored parent of the black was produced by a black stallion to a dun mare, so was known to be heterozygous. The table shows that duns mated to other colors have produced 13 duns to 19 other colors, near enough to expectation in such small numbers to account for dilution being a dominant factor. It must be remembered that duns are not popular, in America at least, and hence there will probably be a deficiency. Also because of this most duns will be heterozygous.

SUMMARY.

The factors so far discussed will account for the following colors, those qualitatively alike being grouped together:

Sorrel-Chestnut Liver.

Black-Mouse.

Bay-Brown-Bloodbay-Mahogany bay-Seal Brown.

Dun-Buckskin-Cream-Isabelline.

Gray-White.

Blue roan.

Roan-Strawberry Roan-Red Roan.

Piebald-Skewbald Blaze and white stockings.

Dappling.

The factors themselves follow with the tentative composition for the different colors:

Factor "c" equals Red or yellow basic pigment.

Factor "h" equals Black.

Factor "b" equals Restriction factor producing bay in presence of "h."

Factor "g" equals Factor for gray pattern.

Factor "r" equals Factor for roan pattern.

Factor "d" equals Factor for dappling pattern.

Factor "s" equals Star or blaze in forehead and white on legs.

Factor "p" equals Piebald and skewbald markings, Dr. Walther's Schabrackenscheckung.

Factor "m" equals light creamy yellow mane and tail.

Factor "i" equals dilution factor dominant to "i," intense.

Chestnut equals "c," may have "b & m" in some cases.

Black equals "c h," may have "d" in some cases.

Mouse equals "c h i," may have "d" in some cases.

Dun equals "c i, c b i" or "c m i," according to kind.

Bay equals "c h b."

Brown equals "c, h, b, d."

Gray equals commonly "c, h, g, d," maybe "c, g, d."

Blue roan equals "c, h, r."

Red roan equals "c, r" or "c, h, b, r," latter commonest.

	Red roan	Blue roan	Gray	Dun	Bay	Black	Chest- nut
Red roan X red roan.....	45	—	—	—	5	—	—
Red roan X blue roan.....	33	11	2	—	2	—	—
Red roan X gray.....	37	7	27	—	4	2	2
Red roan X bay.....	93	6	27	—	101	7	10
Red roan X black.....	14	4	1	—	5	11	1
Red roan X chestnut.....	18	2	4	—	12	2	4
Blue roan X blue roan.....	1	3	1	—	—	—	—
Blue roan X gray.....	—	—	1	—	2	—	—
Blue roan X bay.....	—	—	1	—	8	3	1
Blue roan X black.....	—	—	—	—	—	1	—
Blue roan X chestnut.....	—	—	1	—	1	—	—
Gray X gray.....	—	—	66	—	13	12	—
Gray X dun.....	—	—	7	5	2	—	—
Gray X bay.....	—	1?	50	—	54	6	9
Gray X black.....	—	—	18	5	14	20	5
Gray X chestnut.....	—	—	14	—	7	2	10
Dun X dun.....	—	—	—	2	1	—	1
Dun X bay.....	—	1?	—	4	4	1	1
Dun X black.....	—	—	—	3	1	1	1
Dun X chestnut.....	—	—	—	1	1	—	—
Bay X bay.....	—	—	—	—	5723	274	672
Bay X black.....	—	—	—	—	1218	476	130
Bay X chestnut.....	—	—	—	—	826	70	497
Black X black.....	—	—	—	—	15?	391	41
Black X chestnut.....	—	—	—	—	135	65	108
Chestnut X chestnut.....	—	—	—	—	6?	10?	1594

GLOSSARY FOR THE NON-TECHNICAL READER.

Allelomorph: One of a pair of contrasted characters which are alternative to each other in inheritance, (as for example, black and chestnut form an allelomorph pair.)

Allelomorphism: A relationship between two characters such that the hereditary determiners of both do not enter the same reproductive cell but are separated into separate reproductive cells during the maturation and ripening.

Alternative Inheritance: A distribution of contrasting parental or ancestral characters among offsprings or descendants such that the individuals exhibit one or the other of the characters in question; combinations or blends of these characters being absent or exceptional.

Coupling or Linkage: Such a relation between the factors for two characters that they have a more or less marked tendency to enter into the same reproductive cell when the individual is heterozygous for both of the factors in question.

Dominance: In crossing individuals with alternative characters it sometimes happens that one character will show to the exclusion of the character possessed by the other individual. This is called dominance. In the absence of dominance the characters blend or may present new conditions found in neither parent. One lacking dominance is called a recessive.

Factor: An independently heritable element within the germ cell which makes possible the development of any particular character in the individual resulting from that germ cell.

Heterozygote: An individual in which a given character or factor has been received from only one of the two germ cells which form it. The germ cells produced by such an individual are typically of two kinds, half of them containing the hereditary factor in question, the other half lacking it. Consequently the offspring of heterozygotes contain a mixture of individuals.

Homozygote: An individual in which any given factor is doubly present due to receiving it from both reproductive cells from which the individual arose. Homozygotes breed true.

Epistatic and Hypostatic: Refers to a series of characters such as colors in horses in which one character is dominant to a number of others, as for example, in the horse bay or brown is recessive, or hypostatic, to gray, but is epistatic or dominant to black or chestnut.

Segregate: The tendency of the hereditary factors to separate from each other and to become distributed independently of each other among the reproductive cells, according to the law of chance, either before or at the time of the formation of the reproductive cells.

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ANAPHYLAXIS.

BY W. H. LYNCH, D.V.S., PORTLAND, ME.

Anaphylaxis: "The condition of decreased resistance to the action of a toxin or drug."—Gould's thirty-four thousand medical words, issued from the printing press in nineteen hundred and eleven.

We have not gained our knowledge of bacteria speedily. Twenty years ago it was practically non-existent. Our scientists in their laboratories are forcing the bacilli to come into the lime-light and give up the facts relating to them. This will be followed by finding the antitoxin to destroy their virility, their power to work harm; thus, the logical outcome of all this work is the conquest of disease.

As we review the great progress made in the last half century, the great changes in methods and materials cannot but be considered marvelous. These changes hinge largely on the progress made in the study of bacteria and their products. Our present system of antiseptic surgery, disinfection and immunization has been evolved by these discoveries; and science will—maybe not to-day, nor yet to-morrow, but another day—discover the remedy and apply it for each malady, thus conquering disease.

Pasteur first raised bacteriology to the dignity of a science dealing with micro-organisms in their various morphological and physiological phases, extending as facts gradually accumulate, and observation of their various modes of life, the effect they or their secretions have upon dead or living protoplasm.

Bacteria and their products may be greatly modified by various products and used to produce immunity from diseases originally produced by them. Klein found that the blood of a white mouse dead of anthrax was a protective vaccine for sheep. Klein further found that the blood of a guinea pig was modified as far as cattle was concerned. And so, in the latter part of the last century, investigations of toxins and immunity were carried out establishing the systems of serum diagnosis and serotherapy.

These measures were filled with promise and were gladly welcomed by practitioners of medicine. In a previous paper in the REVIEW in 1910 I expressed the opinion that serotherapy would prove epochal if not revolutionary in the practice of comparative medicine. I am still of this opinion, but with a difference; for, out of this state of affairs rises a new complication, earliest named and described by Charles Richet in nineteen hundred and two as anaphylaxy. In the newer dictionaries I find it is called anaphylaxis and described as "increased susceptibility to an infection or the action of any foreign protein introduced into the body following a primary infection. Opposite of immunity."

In nineteen hundred and six and three years later bulletins were issued by the Public Health and Marine Hospital Service containing studies by Doctors Rosenau and Anderson, who found evidence that there are antibodies concerned in the mechanism of anaphylaxis; that by mixing the blood serum of a sensitive guinea pig with the normal horse serum the toxicity of the horse serum for the guinea pig was apparently increased. These gentlemen urged caution in drawing conclusions from the limited data in our hands because of our lack of knowledge of principles involved. They found no substance of practical value in preventing anaphylaxis when given before the injection of serum. They found this condition lasts sometimes through the remainder of an animal's life; a guinea pig being susceptible after eleven hundred days—three years.

I find that Doctors Biedl and Kraus assert that at least in dogs, the symptom complex characteristic of the so-called anaphylactic shock is caused by a profound peripheral vasodilation with a correspondingly grave fall in blood pressure. Other symptoms which may ensue—vomiting, anuria, diarrhoea—they regard as secondary to vasodilation. These gentlemen also found in the anaphylactic state a greatly decreased coagulability of the blood as well as a marked fall in the number of polymorphonuclear leucocytes. Richet, who gave us the name of this reaction, in discussing researches of Doctors Biedl and Kraus, points out that he has shown there is an extremely rapid fall in arterial pres-

sure, a phenomenon due to cellular changes in the nervous system; and that the primary process must be sought elsewhere than in the peripheral vasomotor apparatus. .

The reason I am writing this paper is because I have had some sad experiences with anaphylactic reactions. I do not deem it fair or pertinent to say what agent I used, because at present these reactions are entirely unmanageable. No share of blame seems to me to belong to our first class manufacturing chemists; but it is up to ourselves to conquer these conditions. And at present there's the rub! With all the credit undoubtedly due these agents for their very great helpfulness, we must needs "proceed slowly" until more conversant with these reactions.

From a casual perusal of my daily paper a short time ago, I concluded the laity were making the acquaintance of this reaction; I read of a beekeeper who was stung by a bee, making him sick. Again he was stung making him very sick, confining him to his bed for several days in a critical condition. It was not believed this effect could have been produced by the aggregate of poison received into his body from these stings; and his Doctor said this was not the case because of the suddenness of the attack and the stubbornness with which it persisted. My newspaper went on in this wise: "As soon as the poison of the bee's sting enters the flesh there is mobilized an army of antibodies to resist the invasion. They may succeed in doing this, but, if within a short time, the same poison again enters what remains of the antibodies may unite with it, causing serious illness or death. This is what science knows as anaphylaxis, and is the way in which many diseases originate."

Anaphylactic reactions will be exhaustively studied and all their manifestations subjected to control. With an earnest body of scientists all over the world concentrating on these problems what other result is possible? Says Stevenson: "The physician is the flower, such as it is, of our civilization; and when that stage of man is done with, and only remembered to be marvelling at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race."

MIXED INFECTION VACCINE IN ONE HUNDRED AND SEVENTY CASES OF JOINT ILL.

BY FRANK W. SCHOFIELD, D.V.Sc., ONTARIO VETERINARY COLLEGE,
TORONTO, CANADA.

The disease Joint Ill, Navel Ill or Septic Arthritis, has become a serious menace to the horse breeders in many districts of Canada and the United States. The symptoms of the disease are, unfortunately, only too well known to need lengthy description. The swollen joint or joints are so characteristic that error in diagnosis is rarely made.

As to the cause, a number of micro-organisms have been considered by different investigators to be responsible for the disease. In Europe, a bipolar bacillus has been mentioned as the likely cause. In America, the ordinary pyogenic organisms are considered generally responsible. During the last year Professor Good of the Kentucky Agricultural Experimental Station, and the writer have published articles on the etiological relationship of *Bacillus Abortivus Equinus* to this disease.

Last summer I made a careful bacteriological examination of synovia aspirated from twenty-three cases of Joint Ill. From five a pure culture of *Bacillus Abortivus Equinus* was obtained. These cases all occurred in an abortion infected district. Ten gave an almost pure culture of a Gram positive haemolytic streptococcus. The remaining eight gave mixed infections of *Colon*, *Staphylococcus Aureus* and *Staphylococcus Albus*. From these organisms a mixed infection vaccine was made containing approximately the following dosage per c. c.

Streptococcus	50 million
Staphylococcus Aureus	100 million
Bac. Abortivus Equinus.....	100 million

The initial dose varied from one-half to one c.c. according to the age and condition of the foal. The dosage rarely produced

any local and never any general reaction. The results obtained were very satisfactory.

The vaccine was distributed free to veterinarians by the Ontario Department of Agriculture on condition that reports of cases were furnished. A total of one hundred and seventy case reports were received. The mortality in this group was 25%. The average mortality in the Province of Ontario is 66%. The results were, therefore, very encouraging.

A similar vaccine has been prepared for use this season and better results are looked for as a result of slight modifications in the vaccine based upon the bacteriological results obtained last year. The dosage has been increased and the *Bacillus Abortivus Equinus* has been replaced by *Bacillus Coli* except for vaccine sent to abortion districts. The vaccine will again be supplied free of charge by the Ontario Department of Agriculture to any veterinarians interested in the disease Joint Ill, providing they return reports of cases treated.

Believing that the real fort of vaccine therapy is in prophylaxis, an attempt is being made to inoculate all the foals dropped during this season in certain heavily infected districts. In this way we hope to greatly reduce the annual number of cases.

The co-operation of a number of veterinarians is desired so that the test may be of real value. Will those interested kindly write to the author—Department of Bacteriology, Ontario Veterinary College, Toronto, Canada?

WISCONSIN VETERINARY MEDICAL ASSOCIATION: This strong state organization of 200 members in good standing (it being an amalgamation of the two former state associations) will hold its first semi-annual meeting at Chippewa Falls, July 14th and 15th, 1915. Secretary Wolcott hopes for an attendance of 300, and believes with the co-operation of all the members, the membership could be increased to that number. That is a righteous ambition, which we would like to see realized, as organization is the stepping stone to the higher attainments towards which our profession is looking. The profession of Wisconsin are assured of the hearty co-operation of the REVIEW.

REPORTS OF CASES.

IMPACTION WITH TYMPANY—KNEADING OF IMPACTED MASS—RECOVERY.

By CRITTENDEN Ross, D.V.M., New York, N. Y.

In company with Dr. Ellis on his Sunday morning round of calls, on March 28th last, finding ourselves at a convenient place to telephone when four miles distant from the office, from which we had been absent about two and a half hours, the doctor telephoned in and was told of a case of colic that had been reported two hours previously. All other calls were of course deferred and we drove to the case in question, three and a half miles distant (in the direction of home) at top speed. When we came in the presence of the patient—a gray truck horse—we found him distended with gas to the limit; his breath coming short and catchy. Dr. Ellis immediately used the trocar in the right flank before giving any medicine and was rewarded with excellent results, the gas coming freely until the abdomen was thoroughly relaxed and the horse comfortable. An ounce each of chloral and nitrox was then given in capsules and a half grain of arecoline hypodermically. A physic ball was also given at this time. We then went back over our route to pick up the calls we had passed over, stating that we would be back. When we returned about an hour and a half later the horse was again distended with gas, and was again punctured and relieved. A stimulant tonic was then prepared, consisting of tincture of nux vomica, aromatic spirits of ammonia and alcohol, and directed to be given in one ounce doses every hour. We then went to dinner. On returning in an hour or more we found the horse down on the right side, very much distended. We got him up and inserted the trocar a third time in the right flank; this time without results. The horse then went down, lying on the right side, and was disinclined to get up. The trocar was then used on the left side, while the horse was in the recumbent position, with very satisfactory results. A hypodermic of strychnine was then given, and after a little while the horse got up. When on his feet his breathing was short and hurried and he had an anxious and haggard countenance. Dr. Ellis examined the horse, stated that it was a case of impaction of the large intestines, and that the prognosis was

far from rosy. It was then getting late in the afternoon and the doctor could not remain any longer. The stimulant-tonic was being continued every hour, and Dr. Ellis asked me to remain with the case and to do anything that suggested itself that in my judgment would help the horse. I watched the case for some time, studying it carefully, and the symptoms seemed to become aggravated and the outlook was gloomy. I finally decided upon trying to reach the seat of the trouble, if possible, and stripped for action. I secured a pail of water and some soap, lubricated my hands and arms, and attempted rectal exploration; but finding the horse distended again with gas, most prominent on the left side, passed the trocar in the left flank with good results. I then administered a little cannabis to alleviate the pain and gave another capsule of nitrox containing a tablet of chinosol to check the formation of gas. I then resumed my task of rectal exploration, which rewarded me with the finding of the pelvic flexure of the large colon impacted. This I assumed to be the cause of the trouble and also the reason why the puncture in the left flank was necessary to be made so low down, and that the fermentation at this time was evidently occurring in the region of the second branch of the colon; and because of this impaction could not travel onward; and because of the anatomical arrangement and possible ingesta present, did not travel back to the caecum. Without further delay I began kneading the mass, for some time without any apparent result. But time and continued labor rewarded me, in that I could feel portions of the mass break off and seem to pass on in their course. These manipulations were kept up until the mass seemed to be broken up; in fact gas had been emitted alongside of my arm. It now being eleven p. m., and the horse showing more ease than at any time during the attack, I left for home, giving instructions to the attendant that should any change occur, that I should be called immediately, otherwise he was to continue to give the tonic regularly, and that we would see the horse the next day. When we visited the horse the following morning we found him resting comfortably, flanks hollow, pulse strong, and peristalsis plainly audible on auscultation. Catharsis occurred before the following morning and the case progressed favorably to complete recovery without even the complication of an abscess, although punctured five times; and at the time of this writing the horse has been at work for six weeks.

TETANUS WITH COMPLICATIONS.*

By H. T. Moss, D.V.M., Dayton, Ohio.

Here was a case, which at my first visit showed several symptoms of tetanus, such as stiffness, nervousness, elevated tail and with partial locking of the jaws, etc.

A fall several weeks previously, at which time both knees were injured, was no doubt the seat of infection.

Ordinary stable treatment had been administered, consisting of washing the wounds with a coal tar product and the use of ointments.

The treatment I administered and prescribed at this time consisted of curetting and cauterization of the wounds with phenol, a physic of aloin, and an intravenous injection of cannabis indica.

The patient was placed in a single stall at the end of the stable where it would be quieter, plenty of water was to be given, and bran mashes with oats as a feed.

I left a combination of hyoscyamus and cannabis indica, allowing two drachms of each to be given three times a day. Potassium nitrate in half ounce doses was to be put into a small bucket of water whenever necessary. Bichloride of mercury in solution being used as an antiseptic to the wounds.

Late the same night, I received a call to the same horse, receiving the information that the animal was in great pain and showing all the symptoms of colic. I found the animal on its feet, but very restless, looking constantly to its side, abdomen slightly distended, there were no intestinal sounds, respiration and pulse both rapid, mucosa congested, trismus, some exposure of the membrane nictitans. Upon rectal exploration, I found an apparent constriction of the rectum, in other words, there was some difficulty in inserting my hand, no feces were present. I found the double colon and caecum impacted and slight tympany of the floating colon. I made a diagnosis of impaction of the colon.

In considering the treatment, I debated with myself which method to follow, the stimulant or the anodyne? I finally selected the stimulant line of treatment. As trismus was present, it was impossible to administer orally. I injected about one grain of eserine. In about half an hour, not getting any results, I gave half grain eserine—still no results. During the next two hours, I gave one and one-half grains of arecoline in half grain doses. I had also given frequent enemas during this time. I

* Read before the Ohio State Veterinary Medical Association, January 7, 1915.

could not produce an evacuation of the bowels; the patient had broken out into sweat, pain was still intense, respirations were faster, mucosa very congested. I had practically given up all hopes for recovery, so feeling that relief from pain would be welcome to the patient, I administered four drachms of cannabis indica subcutaneously. In about half an hour the animal became quiet and was still on his feet. I left him in this condition, saying I would be back in the morning. I found the horse down and struggling, with the four limbs extended. The bowels had moved freely, as shown by the amount of feces passed. I realized that if any results were to be obtained it would be necessary to raise the animal, although I could see that by doing so, I took a chance that he might die in the sling. I raised him, and he died a few minutes after.

The points of interest to me in this case are the separate and distinct symptoms of the two conditions. In the morning we had a true case of tetanus, while at night the animal showed all the symptoms of impaction of the colon as well. I have never seen a case like this one. I tried to figure out whether the treatment I gave in the morning was in any way responsible for the complications I found the same night, but then I have given similar treatment many times before. I would also like the opinion of some one, as to whether under the circumstances as I found them, they would have used the stimulant treatment? I am not backward in admitting that I am looking for information. I might add here, that in such cases (as I first saw this one), I would advise the use of serum, but the owner of this particular animal was not one who was willing to spend the amount on the serum.

TWO CASES OF RUPTURE OF THE PULMONARY ARTERY IN HORSE.

By B. F. KAUPP, Pathologist N. C. Experiment Station. Formerly Prof. of Pathology, Colorado Agricultural College and Pathologist to the Colorado Experiment Station.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

Hutyra and Marek report for the horse, "that the walls of the large blood vessels rupture at times, even without previous disease. The first segment of the aorta and pulmonary artery are very thin at the level of the semi-lunar valves, so that they

are bulged out somewhat by pressure of the blood, even under normal conditions, and may rupture if a sudden rise of blood pressure occurs. As causative factors are given pulling heavy loads, severe exertion, as in galloping, vomiting, labor pains and other exertions."

Prietsch reports rupture of the healthy pulmonary artery while drawing a heavy load.

Block saw a four-year-old stallion with rupture of the pulmonary artery at its bifurcation.

Case No. 1 was a general utility horse used on a ranch for regular farming work. The horse was of average size and well nourished and performed the usual work called upon to do. The case had the history of being "heavy" and rather short of "wind." The horse was working (with a mate) to a twelve-inch plow. About ten o'clock in the forenoon he fell dead in the furrow.

An autopsy was held about two hours after death. All organs were found normal except the heart and lungs. The lungs showed some evidence of vesicular emphysema. The pericardial sac was found filled with dark coagulated blood. A tear about one and a half inches long was observed in the pulmonary artery, just outside the valves which guard its opening.

Case No. 2 was a seven-year-old mare in good flesh. Had a severe attack of strangles about two years previously. Rather "thick winded." Becomes fatigued easily. Used for light work about a ranch. Kept in a box stall at night. Owner found her dead one morning.

Autopsy was held a few hours after death. All organs found normal except the heart and lungs. The lungs were inflated with air and chronic bronchitis was present. This was confirmed by a microscopic examination in the laboratory. The heart sac was found filled with blood. A tear about one and a quarter inches long was found in the pulmonary artery just outside the valves guarding the opening. A microscopic examination was made from prepared sections at the edge of the tear. These were stained both with hematoxylon-eosin and with Weigerts elastic tissue stain. There was noted an atheromatous condition with thinning of the wall at that point.

As a possible cause we would suggest that the chronic condition in the lungs retards, at least to some extent, the free flow of the blood through the vessels of that organ. This condition throws more work on the heart, together with high blood pres-

sure and arterial tension, brought about by high altitude (6,000 ft.), throws a strain upon the pulmonary artery which, as in the aorta, is greatest at the point or close to the point where it leaves the heart. Atheroma results which makes rupture of the vessel under high pressure possible.

CAESARIAN SECTION IN BOSTON BITCH.*

By R. D. WAY, D.V.M., Cleveland, Ohio.

This case was reported to me by Dr. Cunningham, and it shows an instructive phenomenon of nature, which I think might be of interest to some of you.

He was called about noon September 5, 1914, and found a Boston Bull bitch that had been in labor since morning. After a local examination he used instruments and delivered one leg; had extensive hemorrhage. He advised *Caesarian Section*, and took the dog to the hospital. Prepared the field of operation with usual antiseptic precautions, and completely anesthetized the patient. He made an incision about 2 inches long in the median line of the abdomen about $\frac{1}{4}$ inch posterior to the umbilicus. He found the dorsal surface of the body of the uterus and the ventral surface of the rectum adherent, and due to this a perforation of the wall of the uterus by the instruments. He incised the wall of the uterus and removed one dead pup and two live ones, then the adhesions between the rectal bowel and the uterus were broken down and an ordinary catgut ligature placed on the uterus just anterior to the os uteri, and all the uterus anterior to this ligature was removed. The abdominal wall was sutured with silk and washed with 1 to 1000 chinosol sol.; boric acid applied, gauze pack and bandage applied. The wound was dressed in the same way for four days, and dog taken home. In eight days the wound was healed, so the bandage was left off.

Now comes the interesting and phenomenal part of the case. The bitch that was operated on and her mother were owned by the same people. Both females had been in heat at the same time, only one was bred. The two live pups were wrapped in cotton and taken home and placed with the grandmother. The milk came to her breasts and she mothered the pups until the mother was taken home. She was placed in the box with the grandmother and two grandchildren; for some reason the mother

* Read before the Ohio State Veterinary Medical Association, January 7, 1915.

took all the care of the pups from that time on, except nursing them, and the grandmother that had not been bred since the mother was born furnished the milk. Such is the history of the happy family and the way nature provides.

SIMPLE MONSTROSITY.

ANUS AND SMALL COLON ABSENT—WOULD PROBABLY BE CLASSED AS BELONGING TO THE GENERA ARTRETO CORMUS—SPECIE APROCTUS.

By J. F. DEVINE, D.V.S., Goshen, N. Y.

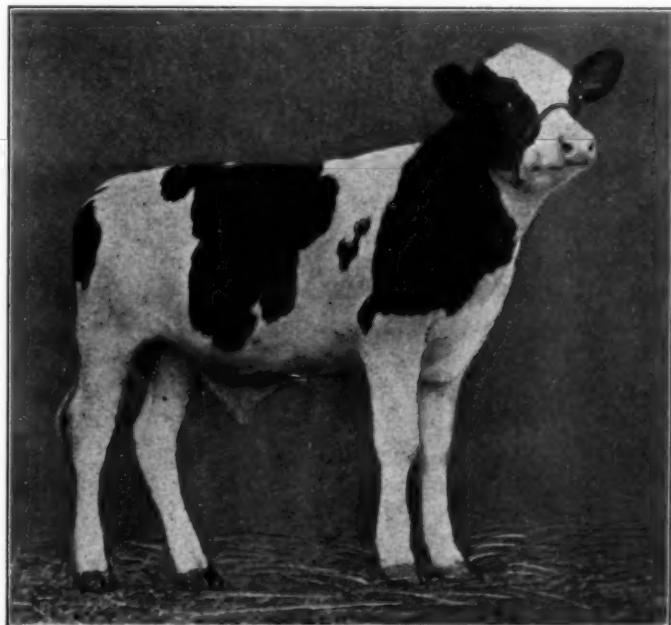
Recently received a call from a breeder near Gardiner, Ulster County, N. Y., to see a valuable pure-bred Holstein heifer calf that had been dropped the evening before. Information given over the 'phone was that calf was in much pain, bloated and apparently without an anal opening. Upon my arrival I found the information as given correct, but also noticed the lack of bulging of the skin at the anal region which is common in cases where the anus is absent and the mucomium imprisoned in the rectum. I removed a circular piece of the skin and made a digital exploration of the parts which clearly indicated that there was either atresia of the rectum or stenosis of the rectal region. I however dissected the tissue with the hope of establishing communication with the colon, but after making a liberal opening in the pelvic cavity above the vagina and passing a large probe into the abdominal cavity I felt reasonably convinced that at least part of the small colon was absent or misplaced, and consequently advised the destruction of the calf. Upon opening the abdomen after death my suspicions were confirmed. The large colon ended in a *cul-de-sac*, where the small colon should begin, hence the absence of the entire floating colon. I can find no record of a similar case in my library and thought the case might be of interest to REVIEW readers.

PRACTITIONER APPRECIATES THE VALUE OF PREVENTIVE MEDICINE.

We reproduce below the photograph of a champion Holstein calf "King of Kings," sired by "King of the Pontiacs," and whose dam also produced the world's greatest butter producer, "K. P. Pontiac Lass," whose record for seven days is 44.18 pounds of butter.

Of especial interest is the fact that "King of Kings" came from a herd in which white scour was more or less prevalent. In order to protect this valuable calf against infection, Dr. W. G. Hollingworth, of Utica, N. Y., prophylactically injected a 10-c.c. dose of white scour serum (P. D. & Co.'s) in the second hour of his life. Between 55 and 60 valuable Holstein calves in the same herd were similarly treated with the result that all were safely immunized against infection.

Such eminent authorities as Hutyra and Marek, Hoar,



King of Kings \$50,000 Champion Holstein Calf.

Jansen and others have proven by extensive research work that the disease is caused by the *coli* bacillus *communis* of various types and that a serum produced from horses inoculated with polyvalent cultures of *bacillus coli communis* will confer sufficient immunity in a large majority of calves against a reasonable degree of exposure to infection.

Stevens Bros. Co., of Liverpool, N. Y., are the owners of "King of Kings," which they value at \$50,000. It is not only particularly gratifying but of immense importance to live stock interests to realize that we now have a serum which will confer sufficient immunity to protect these valuable calves against infection.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

LAMINITIS—VALUE OF READING—MORAL [*G. Mayall, M.R.C.V.S.*].—Record of a case of laminitis of fore feet which had proved rebellious to all properly carried out treatment. Laxative, paring of the feet, poultices hot and cold, nitrate of potash, and tincture of aconite and finally as no improvement was noticed, rheumatoid conditions being suspected, large doses of acid aceto-salicyl were administered. The case remained in the same condition. Then remembering reading of the success that was claimed by the *alum treatment*, he resorted to it, reducing the dose, however. A draught was made of sulphate of alum, 1 oz., nitrate of potash $\frac{1}{2}$ oz., tinct. of aconite 15 minims. Recovery followed after four drenches.

Moral: “Read all you can that bears on your professional work, how you can, when you can and where you can.”—(*Vet. Journ.*)

USE OF ARECOLINE IN THE HORSE [*J. H. Parker, M.R.C.V.S.*].—Pony had tympanitic colic with greatly swollen abdomen. He sweated profusely and had great pains. His temperature was 103 degrees F. One grain of arecoline was injected under the skin, but produced only salivation. Another grain was then given, and followed by the passage of considerable flatus and feces. Pain readily subsided and the pony was saved by the second injection.—(*Ibid.*)

IMPACTION OF THE PYLORUS AND BOWELS IN THE DOG [*G. Mayall, M.R.C.V.S.*].—1st. A well-bred Clumber spaniel, very timid and nervous, had diarrhea, for which he received a 2 gr. pill of calomel which acted well. After receiving tonics for two days the dog was well, and apparently in normal condition. After a week, the diarrhea returned, followed by constipation. On request of the owner, he was destroyed.

At the post mortem, a piece of straw was found bent in five folds and caused impaction of the stomach.

2nd. Fox terrier had been treated on two occasions for worms. He got again a full dose of oil of male shield fern. This was followed two days later by a dose of calomel. Having passed no feces, an enema of glycerine and warm water was

administered, followed by the evacuation of a teacupful of fetid, impacted fibrous grass.

3rd. Another terrier, also previously treated for worms, is receiving again the indicated treatment. This was followed by the same manifestations as case No. 2, and with the same result, the evacuation of firmly impacted decayed grass.—(*Ibid.*)

VAGINAL TUMOR IN A BITCH [*By the same*].—Fox terrier bitch was bleeding and discharging from the vulva. On examination a vaginal tumor is observed. It was painted, injected with "anasthene" (?) and ligatured with silk, and cut off with scissors. The after treatment consisted of injections of solution of alum and witch hazel. After a fortnight, hemorrhage and glairy discharge from the vulva returned. Two applications of cotton-wool soaked in solution of coagulin stopped all the blood and discharge with a complete recovery at the end of three weeks.

The tumor that was removed was a fibro-lipoma, it weighed 2 drach. and was as large as a walnut. Coagulen, known now as euclottin, is a powerful styptic, non-irritant and non-toxic.—(*Ibid.*)

"SPLIT THE AITCHES" [*W. R. Davis, M.R.C.V.S.*].—In the district which the writer speaks of, a cow is said to have "split the aitches" when she presents specific manifestations, viz., when she is found unable to rise, with the two hind legs stretched out almost at right angles to the body. However in many cases, the animal may sometimes be able to take weight on the hind legs, but in the majority of cases the hind part is not supported by the limbs, but hangs an inert mass necessitating the immediate lowering of the animal on the ground again. This condition is most observed just after calving or also a long time after, and is due to fracture of the symphysis pubis or through the pubis parallel to the symphysis. The only treatment is to put the animal in slings, with both hind legs buckled together and wait for the result.

The writer has had two cases. The first had the slings used on her for three occasions, but it proved useless and she died within a week. The other might have recovered if she had been put in slings and kept in. As she was found able to get up now and then, and even stand for some time, she was finally slaughtered. The writer thinks immediate slaughter is the best advice to give.—(*Vet. Rec.*)

TWO CASES OF TUBERCULOSIS IN DOGS [*By the same*].—1st. Eighteen months bull dog, healthy previously, is found losing flesh, has lost its usual gaiety and shows general weakness when

taken out. Appetite remains good. Heart and lungs revealed nothing abnormal.

Cod liver oil was prescribed. Condition not improving, owner orders him to be destroyed. Many of the mesenteric glands were found enlarged, caseous, and scrapings showed numerous tubercle bacilli.

2nd. Black Pomeranian eight years old has shown for some time difficulty in swallowing pieces of meat or biscuit; he was losing flesh and coughed. The mouth and throat were found normal on examination and the passing of a sound into the stomach was painful as the instrument reached the thorax. The dog was destroyed. Bronchial glands were found to form a big caseous mass and the right lung showed a well-defined encapsulated tubercular area. This dog was often in the bar of a hotel keeper and could have been contaminated by licking in the spittoons.—(*Vet. Journ.*)

ACUTE GASTRIC TYMPANY—REMARKS ON THE USE OF THE STOMACH TUBE [*E. Wallis Hoare*].—Valuable Shire stallion, aged 7, had already had two similar attacks which yielded to treatment. Fed with oats softened by steeping in boiling water, a few hours after he is taken with illness. Head is hanging, he breathes quickly, sweats and the abdomen becomes tympanitic. Soon he becomes very violent, knocks his head about, and cuts his nostrils that bleed freely; attempts to drench are imperfect, much of it is lost. As this contained chloral and oil terebinthinal the horse becomes a little quieter, but his distress is yet very great and though the tympany is not extreme, the abdomen has assumed a rotund appearance. The use of the stomach tube is resorted to. First a single tube is used, and then the Knisely's double tube. This is introduced with some little difficulty and a bucketful of water was pushed in the stomach. No gastric contents were returned by the large end of the tube, but after a while gases escaped slowly and in intermittent manner. When the tube was removed the evacuations continued, the horse became much easier, had a drench of oil and terebinthinal and gradually got well.

Remarks—This was the first experience of the author with the stomach tube, but he considers that in some cases unless chloral can be administered, the tube can scarcely be introduced safely on account of the violent struggles. Again the introduction of the tube in the trachea is one of importance to the one who uses it for the first time. The author insists upon the lubricating of the tube and the stiletto with vaseline.—(*Vet. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

SUBCUTANEOUS INJECTIONS OF OXYGENATED WATER AND OF OXYGEN GAS [*Dr. Bayeux and Mr. Bissange*].—These have been the object of two communications before the Society of Comparative Pathology.

The former has been resorting to the hypodermic oxygenation and claimed it as a method of the greatest value, one that will soon impose itself upon all physicians. The results that he has obtained with it in some chronic diseases, such as pulmonary tuberculosis, anemias, diabetes, uremia, puerperal eclampsia, and also some acute ailments such as crisis of asphyxia, croup, whooping cough, etc., all those justify his claims on behalf of the method, which he has rendered perfect by the invention of an instrument, the *precision oxygenator*.

While making clinical observations, the question presented itself to his mind, whether instead of the insufflation of oxygen under the skin, a simple injection of oxygenated water could not be used. He made the experiment and records the case. Ten cubic centimeters of strictly neutralized oxygenated water was injected under the skin of the thigh, slowly and carefully. Immediately the man complained of excessively acute pain, which lasted four days and four nights. Even after this lapse of time the absorption of the oxygen was not completed. The injection of the gas is perfectly painless, the oxygenated water is not.

The conclusion of the experiment of Dr. Bayeux was that while the mechanical action of washing wounds with oxygenated water remains evident, it cannot replace the gas itself in the therapeutic of the diseases where this last has done so well.

* * *

Dr. Bissange, a noted veterinarian, offered an entirely different opinion. For him, the very marked action of the subcutaneous injections of oxygen gas can no longer be ignored. But if it is easy for physicians of large cities to obtain this therapeutic agent easily, it is different for country practitioners and for veterinarians.

For a long time, he has used with great advantage, hypodermic injections of oxygenated water in several injections, in dog distemper, diarrhea of calves, and pasteurellosis of horses.

After having used intra-venous injections of collargol, of electragol, of tallianine, etc., he prefers oxygenated water, which

is not to be ignored in our medicine, as efficacious and not expensive.

He has now a large number of horses affected with severe infections of strangles and he used oxygenated water in subcutaneous injections, every day, in doses of 20 to 30 grams a day.

A syringe of Pravaz, a well prepared neutral liquid, slightly heated before the injections. He has made hundreds of injections and never had an abscess. Made in dogs or in horses, the injections do not appear painful, even in the cases where he had to make 4 or 5 injections in the day.

Perhaps the intra-venous injection which is practised by some would be more rapid in their action, and more efficacious, but he has never used it in that manner.—(*Rev. de Pathol. Comp.*)

MUSCULAR ADIPOSIS [*Prof. J. Basset*].—This condition, result of the transformation of the muscular into adipose tissue, outside of all known determining cause, has been observed in man and also in animals, horse, calf, pig and sheep.

Known in human medicine as "*muscular dystrophia*," progressive primitive myopathy, it is named among veterinarians, as fatty degeneration, interstitial lipomatosis, interstitial adiposis, muscular sclerosis.

The disease is rare. In animals, these are found in good condition. The young ones are more frequently affected; the muscles most generally affected are: the anterior glutial, semi-tendinosus, adductor of the thigh, pectora, sub-scapulasis, great dentata, ilio-spinalis, extensors of the leg and fore-arm. In the calf, however, and in horses, the muscular system can be invaded almost entirely. It has never been noticed in facial muscles. In man it is considered as a "*familial and hereditary disease*." Veterinarians have not studied it from this point of view.

The microscopic and histological studies minutely presented by Prof. Basset close with the following conclusions:

Muscular adiposis is the result of the transformation of the striated fibres in series of adipose cells. In the fibres considered individually, this transformation takes place, very regularly, by autophagocytosis, the conjunctivo-vascular tissue takes no part in it. In the fibres considered in fasciculi, the transformation is not systematised, it operated for each fibre distinctly, without appearing to be influenced by what phenomena take place round itself. And thus a striated fibre absolutely normal can be found surrounded by deep rows of adipose cells. Muscular adipose is the result of regressive evolution or of an incomplete metamorphose.

From the point of view of meat inspection, it is evident that the muscles transformed by adiposis cannot be considered as good meat.—(*Ibid.*)

SIMULTANEOUS INFECTION OF LEISHMANIOSE OF A CHILD, A DOG AND A CAT, LIVING IN SAME HOUSE [E. Sergent, Lombard and Quilichine].—This is the second case of *Algerian Kala-Azar* in a child.

Born and living in the same house, it always played with the two dogs of the house. One of those had been brought to the house three years ago. He had been found wandering on the road some hundred meters away. He was kept chained on the farm for the past three years. During the last year, he looked sick, losing flesh rapidly, poor appetite, pica, blackish diarrhea and alopecia. He was destroyed.

The second dog came to the farm when young. He also was kept chained, about 10 meters from the farm. He began to show sickness at the same time as the child. The principal symptom was his loss of flesh. The tip of his nose became swollen. He was chloroformed. Leishmanias were found in the marrow of the femur and in the liver.

Finally a four months old cat was also destroyed and showed extraglobular leishmania in the marrow of the femur. Thus in the same isolated house, a child, a dog always kept chained and a young kitten had leishmaniose made evident by the morphology of the parasites. On account of their young age, mode of living, isolation of the house, it can be said that these three beings were certainly infected at the same time.—(*Bullet. de la Soc. de Patho. Exo. & Rev. Gener.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

BOVINE OPHTHALMOLOGY. [Dr. Luigi Menicagli]. The writer has published in *Il Nuovo Ercolani* a series of notes relating to this specialty of veterinary medicine, which is not very often noticed in our professional journals.

Ocular Dermoma.—This condition was observed in three animals, two calves and one cow.

The first case was in a calf eight months old, which kept his left eye half closed all the time, as if there was a foreign body in it. The conjunctiva was congested, there was no opacity of the

cornea and towards the middle of the free border of the membrana nictitans there was a tuft of grey hairs, which was attached by a little piece of triangular tissue, one of the angles of which was attached on the concave face of the nictitans and the other on the borders of the cornea at the sclerotic. The animal was properly secured, the eye disinfected, cocaine solution applied and with care the attachment of the dermoma to the globe on the sclerotic was divided and the nictitans removed. There was a troublesome hemorrhage which was easily controlled. Two days after the calf was in perfect condition.

In the second case the animal was sent to the abattoir. The growth was on the center of the cornea.

In the third case, a pregnant cow, which on that account could not be operated, had on the outer superior part of the left cornea a round disc surrounding a granuloma, which was causing great conjunctivitis and lacrymation. Application of nitrate of silver was resorted to with comparative success, leaving only a small leucomatous cicatrix.

STRABISMUS [*By the same*]. A ten-months-old calf is reported having the left eye completely white. The animal presented the following condition. The ocular globe is turned downwards and shows the eye only by the sclerotic, which occupies the place of the cornea. It was a plain case of strabismus. No history could be obtained in relation to the animal, which was otherwise in perfect health. The displacement of the eye was such that the animal had to keep his head low down with the eye motionless, only a very small portion of the cornea being visible. By examination it was found that the ball of the eye had no adherence and could be moved, with the pressure of the fingers, up and down and that of muscles attached on it the superior rectus was flabby and as paralyzed, while the other rectimuscles would manifest contractions when they were irritated or stimulated in some manner. Examination of the eye with the ophthalmoscope revealed nothing abnormal. No treatment was resorted to as the animal was to be sent to the butcher.

TUBERCULOUS IRRITIS WITH SYNECHIA [*By the same*]. This condition was observed in the eye of a cow, which was about to be slaughtered. She was in fair condition and called the attention by the fact that the right eye was covered with the eyelids a little more than in the left. By examination of that right eye, with good light the irregularity of the anterior face

of the iris was noticed. Its color was a yellowish coloration. In using the ophthalmoscope the cornea being transparent and clear, it was observed that while the aqueous humour was reduced in quantity, it was yet clear all through except in the lower part where some exudates seemed to be floating. There was a serious exudation over the iris. On the anterior face there were also some little growths with parts more or less strongly colored. The pupil opening existed no more on account of complete synechia. After the killing of the animal a more complete examination of the carcass revealed an extensive tuberculosis of the lungs. The bronchial and mediastine lymphatic glands were also involved. The right eye which was much atrophied, showed the iris adherent in two places, it was thick and roughened.

PALPEBRAL TUMOURS [*By the same.*] Such troubles are not common. The author has observed only one case in a seven-year-old cow. She had a small tumour, hard, painless, as big as a small nut, situated in the thickness of the superior eyelid of the left eye, close to the temporal angle. This growth was covered by the skin and was adherent to it. It was not a malignant tumor. A simple incision was proposed as the simplest mode of removal. The animal was cast, the head firmly held, the parts cleaned with alcohol at 95 per cent. and lysoform used for general disinfection. Cocaine being injected, after a few minutes an incision was made in U shape and the skin carefully dissected so as to expose the growth well. This was found adherent to the tarsal cartilage, it was readily isolated and after controlling a rather abundant hemorrhage, the skin was secured with stitches and the animal allowed to rise. Cicatrization followed without any difficulty nor complications.

NINETEENTH ANNUAL MEETING, UNITED STATES LIVE STOCK SANITARY ASSOCIATION: The Executive Committee of this Association at Chicago, May 24, after careful analysis of the straw vote of members regarding meeting at San Francisco finally unanimously agreed to arrange for next meeting at Chicago first week in December, 1915. This is with the understanding that the International Live Stock Exposition will be held same week. If the Exposition is not held at that time, dates are subject to change, but in any event Chicago will be the place of meeting.

CORRESPONDENCE.

RELIEF OF BELGIAN VETERINARIANS.

Office of the Secretary, Room 138, State House,

Boston, Mass., May 26, 1915.

DR. ROBERT W. ELLIS, *Editor, AMERICAN VETERINARY REVIEW, New York City:*

DEAR DOCTOR ELLIS—At to-day's meeting of the Massachusetts Veterinary Medical Association, the members went on record as endorsing your movement for the relief of the Belgian veterinarians. I have been instructed to inform you that our association pledges itself to the movement to the extent of twenty-five dollars (\$25) or more, depending upon the subscriptions received elsewhere. We are only too glad to add our mite to this most worthy movement and trust that your efforts will be most successful.

Very truly yours,

EDW. A. CAHILL, Secretary.

NOTE—This prompt response from the Massachusetts Veterinary Medical Association to the REVIEW's movement for the relief of the Belgian veterinarians is certainly encouraging. It is probably the first, possibly the only state association that has held a meeting since the receipt of the May REVIEW by its readers; and we feel confident that similar action will be taken by other organizations as their sessions take place. We wish to thank the members of the Massachusetts Veterinary Medical Association in the name of humanity.—[EDITOR.]

FOOT-AND-MOUTH DISEASE CONDITIONS ABROAD —HOSPITAL EQUIPMENT.

Tyler, Minn., April 3, 1915.

Editors AMERICAN VETERINARY REVIEW, New York:

DEAR SIRS—In *Monedsskrift for Dyrslæger* (Danish) I find the following relating to Foot-and-Mouth Disease:

Denmark—Since December Foot-and-Mouth Disease has appeared in most every section of the country; but usually in single herds. Only a few herds are destroyed.

Sweden—Since December 14, 1914, 5 herds have been found affected and same killed. The valuation paid on each herd is as follows: 95,000, 2,170, 46,000, 12,700 and 112,688 crowns (\$1 = 3.87 crowns).

Germany—December 15, 1914, 17,964 herds were reported affected, of which 5,616 were new reports against 19,296, of which 5,893 newly reported on November 30, 1914.

I am about to build a hospital; but it most certainly cannot be equipped at present, as I would not know just where to look for all modern belongings, but I thought you might help me out, and I am sure a score of others in the same predicament.

Respectfully,

H. RASMUSSEN.

NOTE—We sincerely hope that some members of the profession throughout the country who have built and equipped veterinary hospitals will give Dr. Rasmussen the benefit of their experiences, and offer him a few suggestions. These suggestions, if given through the REVIEW, will, as the doctor says, help many others besides himself.—[EDITOR.]

TICKETS TO INCLUDE LOS ANGELES AND SAN DIEGO.

Berkeley, California, May 28, 1915.

DR. ROBERT W. ELLIS, 509 West 152d Street, New York City, N. Y.:

DEAR DOCTOR—Through the pages of the REVIEW will you kindly call the attention of the veterinarians who intend to visit the Pacific Coast this summer to the fact that they can arrange, without extra cost, for a round trip ticket to include San Francisco, Los Angeles and San Diego by asking the ticket agent at the time the ticket is purchased for a stub ticket permitting free transportation from Los Angeles to San Diego and return. The point to remember is that this stub must be demanded at the time the ticket is purchased. Otherwise an extra fare will be required by the railroad to cover the 125-mile trip from Los Angeles to San Diego. I have been told that every ticket agent in the country is fully informed of the joint ticket arrangement mentioned above.

Tourists are advised not to make the mistake of planning too brief a visit. A week is none too long for either the San Francisco or San Diego Expositions, particularly in view of the fact that the vicinity of each fair holds a vast variety of features which interest from scenic and historic viewpoints.

Very truly yours,

C. M. HARING,

Chairman, Local Committee of Arrangements,
A. V. M. A.

DR. FOSTER RESIGNS: Dr. Samuel B. Foster, county veterinarian, has tendered his resignation to the Multnomah county commissioners, which was accepted.—Portland, Oregon, *Telegraph*.

ARMY VETERINARY DEPARTMENT.

THE HORSE IN THE PRESENT WAR.

Under this caption the *Army and Navy Journal* of May 1 attempts to explain the excessive demand for remounts in this war due to the breakdown of cavalry horses. The *Journal* maintains "that the desperate efforts made by both sides in the western field of operations to outflank each other before the campaign settled down to a contest of entrenchment, resulted in the cavalry being called upon for the most strenuous work. In such raids or expeditions cavalry escorted the infantry in automobiles at fast gaits, causing the speedy breakdown of many horses that would otherwise have remained much longer serviceable."

We wish to remark that this new employment of cavalry in war is only one of several causes of the untimely breakdown of horses in the present war. Highly interesting reports come from German and Austrian veterinary officers, as published abroad. They state that the early ruin of horses has two main causes, either physical or mental.

The bodily ruin of horses is brought about not only by forced raids at fast gaits, but also by continued night marching, and by the new order of moving armies: "Cavalry off the road."

This innovation compels the cavalry to ride over plowed fields or make circuitous routes on bottomless country roads in order to leave the fair roads for use of the marching infantry, artillery and the trains of machine guns, signal corps, aeroplane corps, pioneer companies, train-wagons with supplies, hospital ambulances, all of which are either drawn by horses or conveyed in automobile trucks in endless caravans.

The night-marches of cavalry, which have come into vogue in this war, are considered as especially destructive of horse flesh. Rest during the day seems to be no true rest for horses, for there is always noise and disturbance in camp. After continued night-marches horses have been seen to stop and fall into sleep while standing or to tumble over and sleep so tightly that nothing would arouse them. Extreme emaciation sets in after incessant night marching, and recuperation is slow.

The mental break-down of horses is directly traceable to the terrific noise of the modern quick-firing artillery guns and to the bursting of explosive shells, emitting fumes and producing upheavals of the soil as by earthquake. If such artillery duels are long drawn out, uninjured horses are rendered stupid or violent from over-excitement, just as soldiers finally fall into a trance or become insane. It is difficult to handle and to remove such stupified or violent horses to the hospitals. Treatment, consisting mainly of the application of light anaesthetics and complete rest, is not always successful, as a number of such horses remain "out of their mind," so great has been the shock to their nervous system. Horses so affected come mostly from the artillery and machine gun companies.

The other, long-known causes of losses of horses in war, such as wounds and diseases due to exposure in open winter camps, we shall review in a later issue.

In the article referred to above, the *Army and Navy Journal* also refers to the work of the "Blue Cross Society" as follows:

The horse will have to thank this war anyway for having given him the first official recognition by warring nations of his right to organized relief. First Lieut. J. G. Quekemeyer, 13th U. S. Cav., explains in the April *Cavalry Journal*, with illustrations and reprints, the appeals in the countries at war for aid for horses in service. Never before has such voluntary help been given to the beasts as has been extended in this conflict. The Blue Cross Society is a branch organization of Our Dumb Friends' League of London. The support of the British government was sought, but as yet the War Office has given only such sanction as enables the society to furnish hospital requisites for sick and wounded horses. In France the society was more successful, obtaining the full authority of the French Minister of War to install immediately eight base hospitals for sick and wounded horses at the front. The outfit for a base hospital costs about \$750. These base hospitals have already been established and will handle in emergencies two thousand horses at a time. All the stations are equipped with "humane killers," noiseless weapons killing instantly and preventing much unnecessary suffering. The president of the Blue Cross Society is Lady Smith-Dorrien, wife of General Smith-Dorrien. Lieutenant Quekemeyer says: "Notwithstanding the good feeling existing between most soldiers and their mounts, war necessarily inflicts many hardships and much horrible suffering on our faithful friends. Human life is and should be the first consideration, and if it comes to a choice between saving the life of a horse or that of a man, the man must be saved and the horse left. At the same time horses have a special claim to all the protection against suffering in war that can be provided, and it is gratifying to know that such efficient efforts are being made to reduce these sufferings as much as possible. The work of the Blue Cross Society naturally appeals to every lover of the horse, as well as to all those who recognize the great value of horses in all the various operations of war."

This is very true. Nevertheless our army will make a mistake to believe or hope that the "Blue Cross" can supplant a proper army veterinary service. The work of this most laudable

society is entirely auxiliary to that of the army veterinary corps of the French and British contingents at the front; in fact, it depends upon these corps for the noble work which it seeks and performs. This must be so, because it is necessary to locate the veterinary hospitals of the Blue Cross well in rear of the fighting line to be out of danger and free from the noise and turmoil of the battle fronts. Only such cases as can be transported are sent to the rear and turned over to the Blue Cross hospitals acting, as they do, as convalescent depots. But all other cases must of necessity be attended first by the veterinary officers serving with the units at the front until fit for transportation by marching, by horse-ambulance or by rail.

If we should be embroiled in this war or in any other war to come, army veterinarians will heartily welcome the establishment by our American humane societies of institutions similar to that of the Blue Cross. Thus our army would be induced to finally recognize our oft-repeated plea for more humane treatment of our horses in the field. Yet, any attempt in this direction must come to naught unless we attain first a veterinary corps from Congress, so organized as to render it a capable veterinary force at the fighting front, which, in turn, can make possible the good help of our humane societies.

Our military writers will do well to see these facts in their true light and proper connection; and our cavalry officers are advised to give up the old time illusion that substitutes for army veterinarians can come from among their members or from anywhere else. Capable army veterinarians can only be recruited from the ranks of the veterinary profession proper.

O. S.

A NEW QUARANTINE LAW FOR IOWA: The *Cascade, Ia., Pioneer* of April 22, 1915, publishes Senator Hilsinger's Bill in full, which through the support of the farmers and stockmen passed both houses, and at that date only awaited the Governor's signature to become a law, and in all probability is a law at this writing. This is unfortunate if it is so, as, from our interpretation of the law (which restricts the quarantine in case of an outbreak of disease to a two mile limit), it is directly against the live-stock interests of the state; as it removes from the state veterinarian the right to exercise his own judgment, which is *always* exercised in the interest of the stock owner.

SOCIETY MEETINGS.

IOWA STATE VETERINARY MEDICAL ASSOCIATION.

Meeting was called to order in the Masonic Temple Building, Cedar Rapids, February 9 at 1.30 p. m. by the first vice-president, Dr. G. P. Statter, of Sioux City, in the absence of the president, Dr. J. W. Scott, who was unable to attend on account of sickness.

Mr. John Wonderlick, secretary of the Commercial Club of Cedar Rapids, delivered the address of welcome.

Dr. N. S. Mayo, of Chicago, responded to the welcome in behalf of the veterinarians.

Dr. C. H. Stange read his annual report as secretary and treasurer, which showed the association to be in a very prosperous condition both in numbers and activity of its members as well as financially. The present membership numbers 375 and the cash balance in the treasury, \$389.36.

Dr. H. D. Bergman, of Ames, presented a very interesting paper on *Therapeutics*.* It was followed by a lively discussion.

Dr. N. S. Mayo read a short paper on antiseptics which followed closely along the same line as a portion of Dr. Bergman's paper. Both papers were well discussed.

Dr. Mayo gave a very interesting talk on his observations in Europe.

Mr. George Judish read a paper entitled "*Medical Myths and Early Masters*," which to those who know Mr. Judish it goes without saying was instructive as well as entertaining. Mr. Judish also gave a very plain explanation of the new anti-narcotic law as it affects veterinarians.

A communication from Dr. Pugh, secretary of the Massachusetts Veterinary Association, in reference to a proposed monument to the late Dr. Salmon was read, and upon motion was referred to the executive committee who were to investigate the matter and report at the next annual meeting.

The following three resolutions from the Northwestern Iowa Veterinary Association were read, the third one of which was referred to the legislative committee.

1. Resolved, That the Northwestern Iowa Veterinary Association recommends that the State Association increase its

* Will be published in July issue of *Review*.

annual dues to create a fund for the prosecution of violators of the veterinary practice act.

2. Resolved, That the Northwestern Iowa Veterinary Association recommends to the State Association a prosecution committee.

3. Resolved, That the Northwestern Iowa Veterinary Association recommend that the state legislative committee of the state association be requested to use their efforts to increase the penalty for violations of the veterinary practice act from \$25 to \$100 for first offense, and increase each following offense in proportion.

Was moved, seconded and carried that a delegate from the association be sent to meet with the Live Stock Breeders Association.

The secretary presented 57 applications for membership reported upon favorably by the executive committee which were acted upon in due form and declared elected.

A motion was made, seconded and carried that the president appoint two members to act with the secretary as a committee on publicity, one of the primary objects being to censor as far as possible the newspaper reports of association meetings.

Association adjourned until 7.30 p. m.

EVENING SESSION.

Association reassembled at 7.30 and the entire evening was devoted to the discussion of foot and mouth disease, lead by Dr. Paxton, Federal Inspector in charge of the disease in Iowa. Dr. J. I. Gibson, State Veterinarian of Iowa, Dr. Henry Hell, Dr. Hal. Simpson, Dr. J. W. Griffith, Dr. C. H. Stange, Dr. S. Stewart and others taking part in the discussion.

On motion, association adjourned until 9 a. m. Wednesday.

FEBRUARY 10—SECOND DAY.

Association was called to order at 9.30 by Vice-President Statter.

Dr. John Patterson, chairman of the committee on diseases and treatment, gave an interesting report for that committee; navel ill being his principle subject, which was thoroughly discussed. The doctor quite artfully included in this report a short discussion upon a disease or condition manifested by a total lack of ethics in some members of the veterinary profession. As to treatment, nothing as yet had proven very satisfactory.

Dr. A. R. Menary, chairman of the committee on sanitation, in the report of that committee ably covered the principal lines of sanitary control work that falls to the lot of veterinarians. The discussion following this report consumed the remainder of the forenoon and the association adjourned until 1.30 p. m.

AFTERNOON SESSION—SECOND DAY.

Association reassembled at 1.30 and was called to order by Vice-President Statter.

Dr. A. Kaderabek, chairman of the committee on surgery, read a very instructive paper on "*Prolapse of the Rectum.*"

Dr. Geo. A. Scott followed with a paper entitled, "*Retention of the After-birth in Cows.*"

Both the above papers were discussed together; much interest was taken and an unusually lively discussion resulted.

The next was a paper on "*Obstetrics,*" by Dr. H. J. Sampson, which was evidence in itself that the author had been there himself and was qualified to tell others something about it.

The secretary read a telegram from Dr. Hoskins urging that action be taken by the association on the Army Veterinary Service Bill. It was moved, seconded and carried that a committee be appointed to send telegrams to the two Senators from Iowa and to Senator Lewis.

Next on the program was the election of officers, which resulted as follows:

President, Dr. George W. Blanche, Belle Plaine, Iowa.

First Vice-President, Dr. A. Beck, Auburn, Iowa.

Second Vice-President, Dr. S. K. Haslett, Olwein, Iowa.

Secretary-Treasurer, Dr. H. B. Treman, Rockwell City, Iowa.

Member Executive Committee, Dr. A. L. Wood, Hampton, Iowa, was elected and later resigned, and Dr. J. W. Griffith, of Cedar Rapids, was elected in his stead.

After a report of the chairman of the legislative committee and some minor routine business the association adjourned to meet at the Odd Fellows Hall at 7 p. m.

EVENING SESSION—SECOND DAY.

After a splendid banquet prepared by the ladies of the "Eastern Star," the association was called to order by Dr. S. H. Johnson, who acted as toast-master.

The following gentlemen responded to the toasts: Mayor

Roth, of Cedar Rapids; Dr. N. S. Mayo, of Chicago. Professor L. H. Pammel, of Ames, read a paper entitled "Molds on Corn." Dr. Murray read a paper entitled, "Immunity."* Dr. Herring, of California, spoke briefly, followed by Mr. Bergen, chief of police of Cedar Rapids. Dr. George W. Blanche (president-elect), Dr. C. H. Stange (retiring secretary), Dr. Thompson, one of the state dairy commissioners, Dr. H. B. Treman (secretary-elect), and Dr. J. W. Griffith.

On behalf of the association, Dr. J. I. Gibson, in a few very appropriate words, thanked the ladies for the elegant banquet.

There being no further business the association adjourned *sine die*.

THIRD DAY.

The early part of the day was devoted to the clinic held at Dr. Griffiths' hospital.

H. B. TREMAN,
Secretary-elect.

* Will be published in July issue of REVIEW.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular monthly meeting of the above association was called to order in the lecture room of the New York-American Veterinary College, by the president, Dr. H. D. Gill.

The minutes of the March and April meetings were read and approved.

A letter from Dr. V. A. Moore in answer to the query regarding the investigation of the pathology of azoturia was read and the secretary was instructed to answer Dr. Moore thanking him for his courteous letter and also again extend him an invitation to address the association at some future meeting.

Dr. Gill suggested that at some meeting in the near future a symposium on some special subject be held and Dr. Moore be invited to take part. It was suggested that glanders or influenza would be interesting to all.

Dr. Gill reported for the Entertainment Committee, that the committee had decided, instead of holding the usual smoker, they thought it would be better to have a dinner and dance at the Hotel Astor; and it was also suggested that this be done in con-

junction with the Alumni Society. It was explained that by holding this form of entertainment, the members of the association and the Alumni Society could have their ladies present, as well as any other friends whom they cared to invite. This plan seemed to meet with the approval of all the members present and the president announced the entertainment committee as follows, viz.: Drs. R. W. Ellis, chairman; C. E. Clayton, E. B. Ackerman, R. S. MacKellar. On account of his very recent illness, Dr. Ellis has asked to be relieved from serving on this committee.

Dr. John A. McLaughlin then gave some interesting dog case reports from his note book.

One of these was an odd report of a dog which had been struck by a taxicab and the testicles driven back up through the ring into the abdomen. After some manipulation the doctor succeeded in reducing this condition to normal. The animal was placed under ether during the reduction of this condition.

Also mentioned and explained a number of clinical cases which had recently come under his observation.

Reported that the caesarean operation recently performed on a Boston terrier, which a number of the members present had witnessed, was successful and the animal making a good recovery.

A general discussion of parturition cases in the dog then took place in which a number of the members and visitors present took part.

Dr. R. W. Gannett asked Dr. McLaughlin his technique of ovariotomy in the cat. Dr. McLaughlin said that his method of operating was the same as in the dog, viz., operating on the median line under an anæsthetic.

Dr. Gannett then stated that he has recently operated in the flank without the use of an anæsthetic with marked success. Stated that he is under the impression and belief that the anæsthetic is responsible for a great many of the negative results in this operation.

Dr. Alex. Slawson was unable to be present, but his paper entitled "Sarcoma of the Brain in the Dog" was read by the secretary and proved to be a very interesting account of this pathological condition.

A vote of thanks was extended to Drs. McLaughlin and Slawson for their valuable contributions to the program of the evening.

ROBT. S. MACKELLAR, Secretary.

UNITED STATES LIVE STOCK SANITARY ASSOCIATION.

(Special Meeting of Executive and Advisory Committees.)

MEMORIAL ON THE PRESENT STATUS OF FOOT-AND-MOUTH DISEASE IN THE UNITED STATES AS DRAFTED BY THE EXECUTIVE AND ADVISORY COMMITTEES OF THE UNITED STATES LIVE STOCK SANITARY ASSOCIATION AT CHICAGO, MAY 24, 1915.—Latest reports issued by the United States Department of Agriculture, indicate that Foot-and-Mouth disease is now under control. The quarantined areas in infected states are being made free areas as conditions warrant. So far released sections have continued to remain free of infection, indicating the eradication of the disease.

Several states have in force regulations prohibiting movement of all live stock from states which have at no time been infected with Foot-and-Mouth disease.

It would seem such regulations are unwarranted and work hardship upon the live stock producer, and check development of the breeding and live stock industry.

The United States Live Stock Sanitary Association recommends modification of all such state regulations to conform to the regulations of the Bureau of Animal Industry, United States Department of Agriculture, governing such movement from states where Foot-and-Mouth disease has not existed and from areas which may hereafter be classified as free from Foot-and-Mouth disease.

As horses and mules are not readily susceptible to Foot-and-Mouth disease, such animals should be exempt from any state regulations prohibiting interstate movement of such animals. It is suggested that such animals from quarantined areas be subject to such disinfection of tails, feet, etc., as may be required by state authorities at destination.

RESOLUTIONS OF RECORD: 1. It is the sense of this association that the various states should enact uniform laws regulating the production, sale, distribution and use of anti-hog cholera serum and virus.

2. It is the opinion of this association that the release of the Dairy Show Herd from quarantine is a matter that should be subject to Bureau of Animal Industry regulations, and that the live stock sanitary authorities of each state should determine the

conditions and regulations under which such cattle shall be admitted to their respective states.

J. I. GIBSON, President.
J. G. WILLS, Vice-President.
O. E. DYSON, Vice-President.
W. P. ANDERSON, Vice-President.
S. H. WARD, Advisory Committee.
S. F. MUSSelman, Advisory Committee.
JOHN J. FERGUSON, Secretary-Treasurer.

TUBERCULAR COWS SOLD TO INNOCENT PARTIES.—In a recent issue of the *Twentieth Century Farmer*, we read of an important decision in which the jury returned a verdict for the plaintiff of \$6,866.67. The plaintiff, a resident of Wyoming, had purchased fifty head of cattle from the defendant, of Omaha, Nebraska, at \$100 a head, claiming that the agreement was that they were to be *cows from three to six years old, milk type, free from tuberculosis, showing good udders and no spoiled teats; also that they were to be tested and charts furnished in compliance with the laws of Wyoming*. The defendant claimed that he did not agree to furnish cows free from tuberculosis, but that he agreed to have them tested by the state or assistant state veterinarian in the state from which they originated, and charts furnished in compliance with the law of Wyoming. It would seem from the testimony that the defendant did not do this, but concluded that it had been done from the fact that the cattle which he selected out of a lot of 160, and purchased from a dealer, to sell to his patron (the plaintiff), were ear-tagged, and that charts were furnished him, showing that these animals had all been tested. The test sheets showed the 50 cows purchased to be clean. The defendant purchased them and shipped them to the plaintiff, who in turn sold some of them. Subsequent developments revealed the fact that some of the cows were tuberculous, and State Veterinarian B. L. Davis was notified and at once quarantined the cattle in the plaintiff's possession, also those that he had sold. A law suit followed, and on the charts being exhibited in court, it was seen that they bore no veterinarian's signature and were valueless. This case, which lack of space permits us only to touch upon, emphasises the importance of dealers and others, when buying cattle, looking with extreme care into the matter of test charts, and making sure that they are genuine, through the signature of a veterinarian whom they know, or one (if not known to them personally) whose honesty and integrity have become a universally established fact.

NEWS AND ITEMS.

MUCH NEEDED MEMBER OF OUR BUSINESS CIRCLES, is how the Table Rock, Neb., *Argus* expresses itself in reference to the arrival in that place of Dr. W. A. Geick, of Auburn, who has gone to Table Rock to practice his profession.

DR. ROBERTSON GOES TO DODGEVILLE, WISCONSIN: The Dodgeville *Republican* under date of April 16, 1915, announces the arrival of Dr. L. I. Robertson, from Cowden, Ill., a graduate of the Chicago Veterinary College, to establish a practice there.

DR. GITZ BEGINS PRACTICE AT BRECKENRIDGE, Mo.: Dr. George H. Gitz, Jr., "arrived Tuesday evening," says the *Bulletin* of that place, in its issue of April 16, 1915. Dr. Gitz who is a graduate of the Kansas City Veterinary College, received a hearty welcome from the citizens of Breckenridge.

CANADIAN VETERINARIANS OFF TO THE FRONT: In a recent communication from our esteemed friend, Principal Grange, of the Ontario Veterinary College, he informs us that twenty members of the 1915 graduating class have already gone to the front. Others are expected to follow.

STOCKTON, CALIFORNIA, WELCOMES VETERINARIAN: The Stockton *Mail* of April 24 announces the homecoming of Dr. Nathan Sinai, who has completed his three years' course of studies at the San Francisco Veterinary College and returned to his home with his veterinary degree.

THE CORNELL VETERINARIAN: Number 1 of Volume V of this excellent quarterly was received during April, and is an exceptionally interesting number. Editor Fish and his associates are building up a splendid little periodical of a high-class character.

QUARANTINE AGAINST SHIPMENT OF CATTLE INTO NEW MEXICO AMENDED: In an article in the Santa Fe, New Mexico, *Eagle*, of April 17 last, we learn that Governor McDonald, of that state, upon recommendation of the cattle sanitary board, has modified the quarantine against cattle being shipped into the state, so as to lift same from Arizona, Colorado and Texas.

HOOKWORM BREAKS OUT AMONG MICHIGAN CATTLE: The Benton Harbor, Mich., *Register* of April 16, states that nine cattle had been killed as the result of hookworm in Eaton County. Dr. Ward Giltner, of the Michigan Agricultural College, is on the job.

NEW DISEASE AMONG DOGS.—Under this heading the Indianapolis *News* of May 10th, speaks of a "disease, the nature of which has not yet been determined by veterinarians," as causing the death of large numbers of dogs in the vicinity of Georgetown, Illinois. We trust some member of the profession will tell the REVIEW what the condition is that the *News* refers to.

DR. KIGIN'S SUCCESSOR SWORN IN: "Dr. J. S. Anderson, of Seward, who was some months ago appointed State Veterinarian by Governor Morehead, to fill the vacancy caused by the resignation of State Veterinarian Kigin, was sworn in this afternoon and will begin the duties of the office Monday," says the Omaha, Neb., *Bee* of April 25, 1915.

FIVE MEMBERS OF ALABAMA BOARD OF VETERINARY EXAMINERS to be appointed under the new bill recently passed by the Legislature and signed by Governor Henderson. The Montgomery, Ala., *Advertiser* of April 22, predicted that our good friend, Dr. C. A. Cary, of Auburn, would be chairman of the new board.

WEST BEND, IOWA, TO HAVE AN ANIMAL HOSPITAL: We learn from the Humboldt, Ia., *Republican* that Dr. P. O. Dorweiler, of the above place, is about to build a hospital for the care of his patients. It is to be a two-story cement building, 44 x 50, fully equipped for the care of both large and small animals.

DR. MCKIM BECOMES FIRST ASSISTANT STATE VETERINARIAN OF NEBRASKA: Dr. C. A. McKim, of Norfolk, Nebraska, has leased his hospital and practice to Dr. C. H. Baer, and accepted the position of First Deputy State Veterinarian, which will necessitate him going to Lincoln, to the office of State Veterinarian John S. Anderson. "Under the plans of Dr. Anderson," says the Norfolk, Neb., *News*, "he will leave all the office work to Dr. McKim, taking up the field work himself."

NEW STATE VETERINARIAN FOR SOUTH DAKOTA: We read in the Sioux Falls, S. D., *Leader* of April 24, of the appointment, by Governor Byrne, of Dr. J. E. Phelps, of Alexandria, as State Veterinarian to succeed Dr. O. C. Selby, who had tendered his resignation to the governor, to go into effect April 1. Dr. Selby removed to Worthington, Minn., to engage in private practice.

VETERINARIAN SELLS PRACTICE TO ENGAGE IN BUYING AND SELLING HORSES: The Lincoln, Ill., *Courrier* announces the transfer of Dr. T. A. Donald's practice to Drs. Armstrong and Hickey, so that he might devote his entire time to the horse business. Dr. Donald had been in practice 20 years. The new firm will be known as the Lincoln Veterinary Hospital.

ASSISTANT STATE VETERINARIAN WELCOMED AT LAURENS, IA.: The *Sun* of Laurens, Iowa, expresses its hearty approbation of the appointment, by Governor Clarke, of Dr. E. S. Greenwood as Assistant State Veterinarian, as the citizens of that place not only appreciate the ability and professional standing of the appointee, but also the advantages of a local representative of the state.

TICKS MUST GO: We note in the Gadsen, Ala., *News* that Marshal County, that state, has been provided with an expert in the person of Dr. W. K. McConnell, to work with the "Booster's Club" in getting the tick eradication campaign started in that county. Dr. McConnell was sent to Marshal County to take up this important work by Dr. R. E. Jackson, Acting Inspector in Charge (B. A. I.), at Birmingham.

DR. L. B. HUFF, FORMERLY OF U. S. DEPARTMENT OF AGRICULTURE, TAKES CHARGE OF AURORA SERUM COMPANY: This company, incorporated several years ago and located at Aurora, Ill., will have an output of 5,000,000 to 6,000,000 cubic centimeters of serum per day, says the Aurora *News*. The plant will employ fifteen men, in charge of Dr. Huff, and the serum will be manufactured under government supervision.

VETERINARIAN RETURNING FROM THE WAR ZONE: "Dr. T. W. Watson, formerly of Corsicana, but later of Hillsboro, is expected back from England next week," says the Corsicana, Texas, *Sun* of April 20. Dr. Watson is an English subject, and therefore on the English Army reservist list. He was called upon by his government to accompany a boat load of horses from Texas to England. Having performed his mission, he has returned to the United States, where his family and friends are waiting to welcome him.

AUTHORITIES KILL 1,000 HOGS, says the Philadelphia *Press* of April 24; and on reading the article, it appeared that Foot-and-Mouth Disease had broken out in the piggeries in South Philadelphia, and prompt action on the part of the State and Federal veterinarians was necessary to check its spread. It is needless to say that such action was taken, Dr. A. C. Schaufler

of the B. A. I. with six federal veterinarians, and Dr. D. B. Fitzpatrick of the State Live Stock Sanitary Board with as many more veterinarians from the state department, and we are sure no effort was spared.

DEATH OF WILLIAM HENRY JONES, M.R.C.V.S.:* William Henry Jones, graduate of the Royal College of Veterinary Surgeons, London, July 1, 1875, and formerly of Chatham, Kent, England, died in San Francisco, California, May 28, 1915, from complications arising from rheumatism. Two brothers survive him. W. G. D. Jones, M.D., Swenscomb, Kent, England, and J. C. D. Jones, Singapore, India. He had no relatives in this country. He had been living in San Francisco for several years.

HORSE-DRAWN VEHICLE DOMINATES: As a proof that horse-drawn vehicles still predominate on city streets and country roads, here is a clipping from a recent issue of the Chicago *Tribune*, which reflects vehicle conditions in that city:

"Traffic of all kinds in the downtown loop district of Chicago is more congested than in any territory of equal extent in the world. People who have noticed that it requires an increasing amount of ability to get around the streets may well keep their eyes and legs in training. Conditions are certain to get much worse before they improve.

"The number of automobiles on the loop streets has increased 60 per cent. in the last five years. That would naturally be supposed to mean that the number of horse-drawn vehicles had correspondingly decreased. Unfortunately for the peace of mind of pedestrians exactly the opposite is true. A census made by the officers of the traffic squad shows that within the last two years the number of horse-drawn vehicles has increased by 30 per cent. Every day 80,000 tons of freight are trucked through the loop.

"The same census shows that every day there are 130,000 teams moving through some part of the district bounded by Twelfth street on the south, the lake on the east, Chicago avenue on the north, and Halsted street on the west. Good, old, faithful Dobbin is very far from being turned out to pasture."—(*The Horse Lover.*)

NEVER WANTS TO RUN OUT: Dr. H. B. Hamilton, of New Bedford, Mass., says in renewing his subscription to the REVIEW: "I will stay with you until enclosed check is used up—then draw again."

* [Data from Dr. Wm. T. Egan.]

PIGS TO BE PUT ON TRAIL OF FOOT AND MOUTH DISEASE GERMS: Dr. J. A. Payne, government veterinarian in charge of the federal forces at Louisville, Ky., after thoroughly completing the disinfection of the cattle pens, borrowed a number of pigs and put them in the pens as a means of determining whether the pens were absolutely free from the germs of Foot and Mouth Disease. Dr. Payne explained, in an article in the Louisville *Courier-Journal*, that pigs contract the disease more quickly than any other animal, due to their rooting proclivities, which brings them in contact with all germs without loss of time. The doctor explains further that it might be a month before cattle would be put in some of the pens, and in the meantime they would have no positive proof that they were foot and mouth disease germ free: The pigs will be vaccinated against hog cholera, and if they fail to pick up foot and mouth disease germs, will be returned to their owners. Over sixty slaughter houses that have been disinfected by Dr. Payne will be subjected to this test of the efficacy of the work.

MAY 24, 1915.

Dr. N. S. MAYO,

Secretary, American Veterinary Medical Association,
4753 Ravenswood, Chicago, Illinois:

Dear Doctor Mayo—The members of the Local Committee of Arrangements are very much pleased that you have selected the Denver and Rio Grande and Western Pacific as the route for the A. V. M. A. special train. These roads pass through by far the grandest scenery of any entering California.

Enclosed is a Western Pacific folder which describes the route in detail, which I think should be placed in the hands of every A. V. M. A. member east of Denver. Probably the Western Pacific Railroad would be willing to do this if you would furnish them with a list of the members, or in case you have any difficulty in making this arrangement let me know and I will take the matter up with the San Francisco office.

Very truly yours,

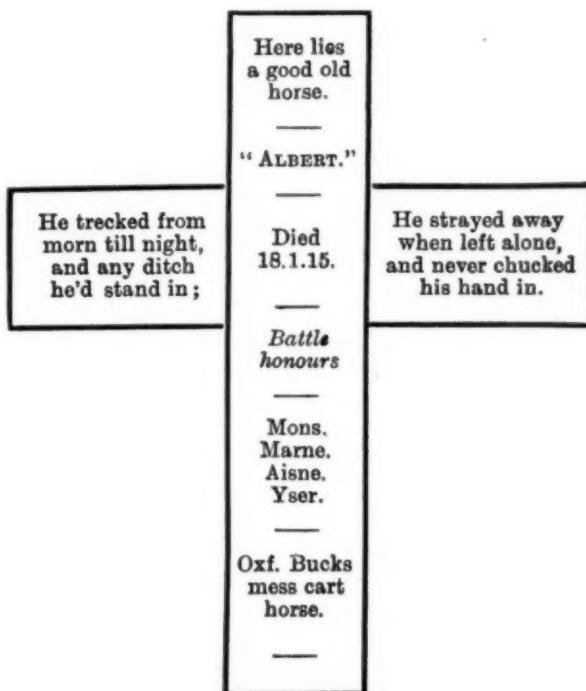
C. M. HARING.

Chairman, Local Committee of Arrangements,
of the A. V. M. A.

FROM THE TRENCHES.

To the Editor of THE VETERINARY NEWS:

SIR—If you consider the following to be of sufficient interest to publish, please do so. In travelling from place to place in the fighting area in the North of France one frequently encounters objects by the wayside which attract attention. My attention was called, a few days ago, to an isolated grave not many hundred yards behind the firing line. In observing it, I read the following:



I afterwards ascertained that the old horse was a great favourite, that he had died from an impacted stomach in consequence of straying away and looting, that his epitaph depicted his true character, and also that he had come safely through the battles mentioned, carrying food for his officers.

—(*Veterinary News.*)

GEO. M. VINCENT,
Lieutenant, A. V. C.

LAWS OF NEW YORK.—BY AUTHORITY.

(General—All Counties.)

Chap. 381.

An Act to amend the public health law, in relation to the practice of veterinary medicine and surgery.

Became a law April 26, 1915, with the approval of the Governor.

Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Sections two hundred and twelve, two hundred and twenty and two hundred and twenty-four of chapter forty-nine of the laws of nineteen hundred and nine, entitled "An act in relation to the public health, constituting chapter forty-five of the consolidated laws," are hereby amended to read as follows:

§ 212. *State board of veterinary medical examiners.* There shall be a board of veterinary medical examiners of five members, each of whom shall hold office for five years from August first of the year in which appointed. Beginning with August first, nineteen hundred and fifteen, the board shall be so appointed that the term of one member shall expire each year. The New York State Veterinary Medical Society shall at each annual meeting nominate five examiners. The names of such nominees shall be annually transmitted under seal by the president and secretary prior to May first, to the regents who shall, prior to August first, appoint from such list the examiners required to fill any vacancies that will occur from expiration of term on July thirty-first. Any other vacancy, however occurring, shall likewise be filled by the regents for the unexpired term. Each nominee before appointment, shall furnish to the regents proof that he has received a degree in veterinary medicine from a registered veterinary medical school and that he has legally practiced veterinary medicine in this state for at least five years. If no nominees are legally before them from the society, the regents may appoint from members in good standing in the veterinary profession without restriction. The regents may remove any examiner for misconduct, incapacity or neglect of duty.

§ 220. *Registry.* Every license to practice veterinary medicine shall, before the licensee begins practice thereunder, be registered in a book to be known as the "Veterinary Medical Register," which shall be provided by and kept in the clerk's office of the county where such practice is to be carried on, with name, residence, place and date of birth, and source, number and date

of his license to practice. Before registering, each licensee shall file, to be kept in a bound volume in the county clerk's office, an affidavit of the above facts, and also that he is the person named in such license, and had, before receiving the same, complied with all requisites as to attendance, terms and amount of study and examination required by law and the rules of the university as preliminary to the conferment thereof, and no money was paid for such license, except the regular fees, paid by all applicants therefor; that no fraud, misrepresentation or mistake in any material regard was employed by any one or incurred in order that such license should be conferred, and shall annually in the month of January report, under oath, to the state board of examiners, any facts required by the board, shall pay to the regents a registration fee of one dollar, and shall receive a certificate of registration that must be conspicuously displayed together with the original certificate of registration. Every license, or if lost, a copy thereof, legally certified so as to be admissible as evidence, or a duly attested transcript of the record of its conferment, shall, before registering, be exhibited to the county clerk, who, only in case it was issued or indorsed as a license under seal by the regents, shall indorse or stamp on it the date and his name preceded by the words, "Registered as authority to practice veterinary medicine, in the clerk's office of _____ county." The clerk shall thereupon give to every veterinarian so registered a transcript of the entries in the register, with a certificate under seal that he has filed the prescribed affidavit. The licensee shall pay to the county clerk a total fee of one dollar for registration, affidavit and certificate.

§ 224. Penalties and their collection. Every person who shall practice veterinary medicine within this state without lawful registration or in violation of any provision of this article shall be guilty of a misdemeanor, and shall forfeit to the people of the state of New York, the sum of fifty dollars for each offense, which may be paid to the board or sued for and recovered in the name of the people of the state of New York in an action brought therefor by the attorney-general. Any person who shall practice veterinary medicine under a false or assumed name or who shall falsely personate another practitioner of a like or different name, shall be guilty of a felony; and any person guilty of violating any of the other provisions of this article, not otherwise specifically punished herein, or who shall buy, sell or fraudulently obtain any veterinary medical diploma, license, record or registration, or who shall aid or abet such buying, selling or fraudulently obtaining, or who shall practice veterinary medicine under

the cover of a diploma, or license illegally obtained, or signed or issued unlawfully or under fraudulent representation, or mistake of fact in material regard, or who, after conviction of a felony, shall attempt to practice veterinary medicine, and any person who shall, without having been authorized so to do legally, append any veterinary title to his or her name, or shall assume or advertise any veterinary title in such a manner as to convey the impression that he is a lawful practitioner of veterinary medicine or any of its branches, shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not less than two hundred and fifty dollars or imprisonment for six months for the first offense, and on conviction of a subsequent offense by a fine of not less than five hundred dollars or imprisonment for not less than one year, or by both fine and imprisonment.

§ 2. This act shall take effect immediately.

STATE OF NEW YORK, }
Office of the Secretary of State. } ss.

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

FRANCIS M. HUGO,
Secretary of State.

THE HORSE IN ALL CIVILIZATIONS.*

In the Utilities; in the Recreations; in the Literature; in the Heroics; in Mythology.

SPEECH OF HON. ISAAC R. SHERWOOD, OF OHIO, IN THE HOUSE OF REPRESENTATIVES, THURSDAY, MARCH 4, 1915.

Mr. Sherwood—Mr. Speaker, the ponderous and unusually expensive Agricultural bill carries a liberal appropriation for horse breeding and experiments in live-stock production. It is the universal opinion among expert horsemen that there are sufficient ways to spend the tax money of the people without going into competition with private enterprise in scientific horse breeding. Every intelligent horseman knows that the United States standard-bred trotting horse, bred for over three-quarters of a century by private enterprise and private capital, is the superior of any horse in either Europe or Asia. He is in stamina, quality, speed and style the superior of the Orloff trotter

* We are indebted to our esteemed friend, Dr. John V. Newton, of Toledo, Ohio for the copy of Congressman Sherwood's address in behalf of the horse, that we have reproduced here for REVIEW readers.

bred under Government auspices in Russia for a quarter of a century longer than the American trotter.

The following resolution, unanimously adopted, expresses the prevailing views on this subject of not only saddle-horse devotees, but of all other classes of horsemen in the United States, especially the breeder of standard trotters and thoroughbreds:

Resolved by the American Saddle Horse Breeders' Association, in annual meeting, this April 11, 1913, That it be, and is, the sense of this meeting that the breeding of horses is not properly within the function of the Government, and the undertaking on the part of the War Department and Department of Agriculture of the United States Government to breed horses for Cavalry service is an unwarranted and unjustifiable interference with private enterprises; and, further, that each member of this association be, and is hereby, requested to communicate with his Member of Congress and the two Senators from his State, protesting against this Government's interference with private affairs.

HOSTILE LEGISLATION HAS RUINED HARNESS RACING.

How is it possible to promote scientific horse breeding by the United States Government in the presence of so much hostile legislation by the States to wipe out horse racing or horse culture? Speed horses of high quality commanded very remunerative prices when breeders were allowed to race their products in the grand circuit. There were plenty of ready home buyers at the end of the grand circuit for tried and educated horses of speed, manners and quality, and buyers from Russia, Austria, London, Paris, and nearly all the leading capitals of Europe. Millions of good gold dollars were brought into the United States by foreign buyers, prices ranging for stallions of fashionable breeding and extreme speed from \$25,000 to \$75,000. All the stock farms were prosperous, and there was neither a demand nor an excuse for Government patronage or Government aid until the hypocritical blatherers, masquerading as reformers, started on their destructive work.

I am not here to criticize the efforts of the Government to promote scientific horse breeding, but to call attention to the notoriously unfortunate fact that nearly all the States north of the Ohio River have enacted hostile legislation to discredit and practically ruin scientific horse breeding. This has been done largely by legislation against selling on race tracks. This legislation has practically ruined the splendid series of harness racing known as the grand circuit, which a decade ago furnished

to millions of horse-loving enthusiasts the most wholesome and recreative and alluring of all the outdoor sports and pastimes of the American people. This legislation has also ruined the county fairs, which for half a century have afforded so much wholesome enjoyment to the boys and girls of the farms.

HAS ONLY INCREASED GAMBLING.

And what has been the result of this legislation upon the speculative element of modern society? Has it stopped gambling? No; it has increased it. Has it elevated the moral tone of society? No; it has degraded it. All peoples—Christian, pagan and Mohammedan—have their recreations and pastimes. If they are not allowed the best they are liable to go to the worst. In the United States we have practically killed high-class horse racing and inaugurated prize fighting, baseball, and football. And we are now gambling three times as much on these games as we ever did in the very heyday of horse racing. And a game that is outlawed in every civilized country around the world—prize fighting—is now the most popular pastime of the sporting element of the American people. The brutal bouts of the nose smashers and rib crackers of the prize ring are the leading features of all our leading daily newspapers. They are even betting disgracefully on the polo game. And the select ladylike are gambling on it far more than was ever known on race horses.

Here is a reliable telegram showing the big hit made by Mrs. Hitt:

Los Angeles, Cal., March 4.

Perry Beadleston won the laurels in to-day's polo round robin, his individual score of 6 being the best. Mrs. William Hitt, formerly Katherine Elkins, bid in Beadleston at the auction pool last night for \$35 and won the \$700 pot. Some one estimated that at least \$12,000 a game has changed hands during the season.

And no protests anywhere.

As I never bet a dollar in my life on a horse race and never bought a pool ticket on a horse and never bet on any other sport, not even a twilight tango, I am giving an entirely disinterested opinion on this vital question, based on over 60 years of personal observation.

When the football team of the University of Pennsylvania met in combat the football team of the University of Michigan at Ann Arbor, Mich., this team of high-class university students

carried with them \$4,000 to bet on the game, and the game was played and the money was bet within the sacred precincts of that great university. Not a sound was heard against it. Had a horse race transpired on that highly cultivated ethical soil, with \$4,000 bet on the result, all the gamblers in the game would have been arrested and penalized. As an ethical question, is it more of a crime, either morally or by statute, to bet on a four-legged animal than on a two-legged human being?

In England, when Edward VII was Prince of Wales, only a few royal degenerates of his fast set patronized the prize ring; but in all the larger cities of the United States the "four hundred" are in the craze to witness the nose smashing and human blood letting of the prize ring. In view of this deplorable degeneracy, the harness horse offers to-day the most recreative and morally wholesome entertainment of all the outdoor sports and pastimes—a sport free from both brutality and blood, a sport free from smut and all immoral trend, a sport full of good health and good cheer. The actor and the showman are always the best types of the moral and social elevation of any people. The actor acts to please only. If the people demand smut, the actor is always a smut machine. If the people demand brutality and blood, the prize fighter and the bully become the stars. How far are we away from that condition now? The grand plays of Shakespeare and all dramas of moral import are everywhere being supplanted by the frivolous, vulgar and smutty vaudeville.

WHY GOD CREATED THE HORSE.

The monkey and the magpie, on their respective perches, are always interesting. The former with his grimaces and antics and face, reminding us of the primeval man, and the latter, with his song and chatter, seems the incarnation of the music of the woods. But it is not given to man to know why an All-Wise Creator made them as the companions of the forest. But every intelligent human being knows why God created the horse. In the domain of the utilities of life, in the more esthetic field of the recreations, in poetry and song and sculpture, and on the red fields of war, the horse, since creation's dawn, has been the omnipresent companion and helpmate of his master—man. Let us now scan the law of the inevitable—the natural loves and instincts of man as illustrated by all history. From the ancient Pharaoh of the Exodus to Gen. Phil Sheridan, the horse has shared the honors of war, the glamors of love, the wild witchery of chivalric

tournament, and the gloom and glory of all the crusades, Christian or Mohammedan. By a law of Moses the Jews were forbidden to ride horses. The horse at that period, before the invention of gunpowder, was regarded solely as an engine of war, and Moses desired to make his people a pastoral people, devoted to the arts of peace. This is why Christ rode into Jerusalem on the more docile and peace-loving ass—to symbolize more fully his mission of peace and good will to all mankind. And right here let me turn aside to point a moral. To-day we have too much of the machine in our social and political life. The almost universal pursuit of money is trampling in the mire all poetic and patriotic feeling and wearing all the verdue out of men's hearts—and women's hearts, too.

THE HORSE IN THE HEROICS.

From time immemorial the horse has been immortalized with his immortal master. He has been perpetuated in stone and iron and bronze with the poets, philosophers and soldiers of the world.

In Berlin it is Frederick the Great and his horse.

In Trafalgar Square, London, it is Lord Wellington and his horse.

In Paris it is Napoleon and his horse.

In our National Capital it is Grant and his horse, Jackson and his horse, Sherman and his horse, Gen. Logan and his horse, and glorious old "Pop" Thomas and his horse. In Richmond it is Washington and his horse, Robert E. Lee and his horse, and Stonewall Jackson and his horse.

On the obelisks of dead old Egypt, on the Arch of Trajan at Rome, and the arch of triumph that Napoleon built in Paris to celebrate his victories, the horse and his hero rider are multiplied on every ascending circle.

The old testament prophetess Miriam, taking her timbrels to swell the song of triumph which Moses gave to the poetry of the ages, in celebrating the drowning of Pharaoh and his cavalry in the Red Sea, says:

"Sing ye to the Lord, for He hath triumphed gloriously. The horse and his rider He hath thrown into the sea."

You will notice that the inspired prophetess gives the horse first mention over the soldier, doubtless on his merits, as the more humane of the two.

Prof. Darwin does not tell us in his great work on the evolution of man the number of years that elapsed between the de-

velopment of the manlike ape to the apelike man; but, since history began, with its dim and uncertain light, I believe the horse with hoofs to have been coexistent with the devil with hoofs and coexistent with the apelike man, if not coequal.

Prof. Leidy, very high authority, says the prehistoric man had a prehistoric horse for his companion. The same high authority says that while it is true that Columbus discovered no horses with the native Indians when he discovered America, there is no longer room for doubt that the horse lived on the American Continent before the race of Adam.

I believe that he lived alongside of the mastodon as the companion of the prehistoric man.

Dr. Allen, in his great work entitled "Civilization," gives a vivid picture of the first arrival of the barbaric Huns in Europe in the fourth century. The chiefs are all mounted on magnificent horses, richly caparisoned, that, as Lord Byron says in immortal Mazeppa, "look as if the speed of thought were in their limbs."

In Bulfinch's fascinating book entitled "King Arthur and His Knights," which includes the heroic age of chivalry, we find the horse the conspicuous figure in every joust and tournament, escapade and romance. He is prominent in all the songs of the troubadours, many of which were written by women. Indeed, the word chivalry is from the French word *cheval*, a horse.

The history of all civilizations, Christian, pagan and Mohammedian, prove that God made the horse for man's utility, comfort and pleasure. Those who think that any man-made machine, however, artistic, can ever take his place know little and think less. Of course, we shall have machine motors, as we have wax flowers and paste diamonds and crockery dolls. But wax flowers will never shed fragrance on the bosom of a divine woman, like the God-grown blossoms; and crockery dolls will never take the place of real babies; neither will the counterfeit blaze of paste diamonds ever mock successfully the rainbow tints of the real gems. And the live horse, the horse immortalized in song and story and sculpture and romance and war, will ever be animate and imperishable; man's best and most wholesome friend among the animals.

THE HORSE IN HEROIC LITERATURE.

It is a historical fact, with 2,000 years of civilization to verify it, that the introduction of the horse in public amusements has always marked the improved moral tone of every people, either Christian or pagan. In that period of brutal rule so vividly de-

picted in that great historical novel *Quo Vadis*, when Nero sat above Rome, wild beasts from the forests of Germany were brought to fight gladiators and devour Christian martyrs in the Roman amphitheater, amid the wild applause of the Roman populace. Later, when Rome was touched with a gentler and more benign civilization, under the Emperor Augustus, the bloody bouts between men and wild beasts were supplanted by the chariot races, where the horse was the main factor of the entertainment.

All the poets of modern times put horses under their heroes. King Richard III, according to Shakespeare, offered his whole kingdom for a horse, after his game steed fell dead on the bloody battlefield of Bosworth. He could not get another horse on his offer, and thereby lost the battle and the crown, and the blood of Plantagenet was dried up forever, and the blood of Tudor came in to rule England, all for lack of a horse.

All the standard English poets were horse fanciers. Lord Byron's *Mazeppa*, a poem of horse and romance and escapade, is one of the grandest in the language. Sir Walter Scott, in immortal *Marmion*, puts into Lady Herron's sweet mouth the story of "Young Lochinvar," one of the most thrilling musical gems in the English language. And young Lochinvar's horse is the supreme factor of the escapade. You remember when young Lochinvar stole away the bride that was about to wed "a laggard in love and a dastard in war," he caught her on the home stretch, and throwing her willing form behind his own, astride his prancing steed, while two pair of chivalric legs were thrilling the throbbing ribs of his game flier, the lads and lassies of the laggard bridegroom had no steeds fleet enough to follow and young Lochinvar got away with everything.

Even Tennyson, late poet laureate of England, with all his finical, fine ladyisms of versification, occasionally braces up into the robust heroic when he mounts the English thoroughbred. He does this in "Locksley Hall," but his best effort by far is "The Charge of the Light Brigade." But Tennyson is hardly in the same class with Sir Walter Scott. In all the minstrelsy of Scott the horse always comes in to gild the heroics, whether he sings of love or war.

And the finest dramatic poem of our great Civil War is "Sheridan's Ride," written by our Ohio poet, T. Buchanan Read, in which the horse is the hero, because, without that game flier Sheridan could never have turned defeat into victory in that immortal 20-mile ride from Winchester to Cedar Creek. It was

the fleet black stallion that carried Sheridan that gray October morning in 1864 that made victory possible. And the poet tells it well:

With foam and with dust the black charger was gray;
By the flash of his eye and his red nostrils play,
He seemed to the whole great army to say:
I have brought you Sheridan to save the day,
From Winchester, twenty miles away.

* * * * *

And when their statues are placed on high,
Under the dome of the Union sky,
Be it said in letters both bold and bright,
Here is the steed that saved the day,
By carrying Sheridan into the fight
From Winchester, twenty miles away.

In the language of Lord Byron, in his immortal "Mazeppa," "Bring forth the horse"—the harness horse—man's best, most useful and most wholesome animal friend. Let us see him, often and again—in the swift-footed flights of the charmed circle, in the bright aurora of the twentieth century, under our benign skies and suns, under our flag with the gleaming stars of States.

Have you ever stopped to think what would have become of Gen. Sheridan and our Army that desperate day had Gen. Sheridan made the ride in an automobile? Could he have made it with a "busted" tire? Could he have inspired the boys with courage anew with a machine instead of the black charger that, with foam on his flanks and nostrils red as blood, carried the courage of his great master into the hearts of the musketeers? An immortal poem was born that day that will go singing down the ages; not inspired by Gen. Sheridan, but by Gen. Sheridan and his horse.

It is not the war horse that Christian civilization of the twentieth century, now in its dawn, should care to exploit. It is the domestic horse. The horse of peace, the horse that carries his master, in the exhilaration of the wind, along pleasant valleys, by running brooks, and meadows green with verdure, by woods vocal with the song of birds, to make him forget his nervous worry over business cares and catch an appetite and the serene joy that awaits good digestion.

THE HORSE IN MYTHOLOGY.

Is it possible that a mere animal like the horse should have been a vital part of the creed that linked men and gods in the religion of the most poetic and accomplished of all the ancient peoples? The religions of ancient Greece and Rome have long since become extinct, but the poetry and literature of the age of

mythology have enriched the literature and poetry of all living languages. The religion of these two, now dead, civilizations is the most poetic and irresistible of all the high-wrought witcheries of men or gods in the mystic domain of the supernatural. And if the horse is a vital element in the ministering power of the gods of mythology, it indicates that of all the animals in the animal kingdom the horse, in the conception of the pagan world, was endowed with a creative potency ranking with the superior gods.

We learn that the god Neptune controlled all the waters of the great ocean—the Mediterranean Sea being the only ocean the Greeks knew—and that he created the horse. Homer, in his *Iliad*, sings of Neptune thus: “He yokes to the chariot his swift steeds, with feet of brass and manes of gold, and himself (Neptune) clad in gold, drives over the waves.”

Prof. Murray’s Manual of Mythology, speaking of Neptune and his sea horses, says: “The sea rejoices and makes way for him. His horses speed lightly over the waves and never a drop of water touches the brazen axle.”

In Greek statuary Aurora is represented as a spirited maiden with expansive wings, clad in flowing robes of white and purple, riding the Pegasus, and distilling through clouds of amber the morning dew. For the benefit of all horsemen who dote on pedigrees, I submit herewith the high-wrought pedigree of Pegasus:

When the cruel god Perseus cut off Medusa’s head, as the mythical story runs, the blood sinking into the earth produced the winged horse Pegasus. Minerva, the Goddess of Wisdom, caught him wild and tamed him, and presented him to the Muses. And the fountain of Hippocrene, on the Muses’ Mountain, Helicon, was opened by a kick of Pegasus’ hoof. This seems like a large horse story, but it is as reliable as some of our modern tales. Minerva gave Pegasus a bridle of gold lace, and with his wings he soared the sky like a bird. In fact, he is the original first-class flier in the grand circuit of the skies. An agile youth, who came to the Court of the Gods, named Bellerophon, rode Pegasus into the upper air and with his spear killed the fiery dragon, Chimaera, as he was cavorting the sky.

Not only is the horse a foremost factor in the religions of ancient Greece and Rome, but he figures still more conspicuously in the religions and mythologies of ancient Persia and India. In the Vedic hymns of Persia, the most interesting and instructive of all the weird and mystic literature of that country, we gather

a true idea of the religion of the ancient Persians and learn therefrom the most sublime conceptions of the Supreme Being. These hymns were written a thousand years before Christ. The Vedic theory of the creation is far more poetic than the Mosaic account. It attributes all created things to a single being—the Golden Child, “ who established the earth and this heaven, who built the firmament of ether, measured the air, and set the sun on high, and who begot the bright and mighty waters.” In the Vedic hymns, running through 50 pages of Prof. Timothy Dwight’s great book, *The Ancient Classics*, I find the horse is mentioned no less than 60 times, always as a potent factor in the supernatural control of earth, air and the heavens. Here is a specimen quotation:

Oh Rudras, friends of the golden chariot, come hither for our welfare. possessed of good horses and chariots, penetrating the clouds, shaking down the rain from the sky; red horses and faultless, noble by birth, golden breasted. Oh, oh, Maruts, you have given us wealth of horses, chariots, and heroes; golden wealth.

In the wonderful religion of Buddha, the first great teacher and prophet of the Golden Rule, the horse has a conspicuous and ever-abiding place. According to Prof. Ephephanius Wilson, in his fascinating book, *the Life of Buddha*, the great Buddhist prophet taught the perfect life of virtue, temperance, morality, peace and brotherly love at least 800 years before Christ. In fact Buddha is the first great philosopher of human destiny—immortality—as we now understand soul life. And after the lapse of over 25 centuries Buddhism still stands first among the four great religions in the number of its devotees. In the life of Buddha as translated from the Chinese into English by Prof. Samuel Beal, Buddha was the world’s first great teacher of the true life. Like the only Christ, Buddha was sorely tempted to abandon the path of virtue and sobriety, but he was not tempted by a personal devil, but by the spirits of evil in the guise of bewitching nymphs, and, according to all the books on Buddhism, it was the horse that carried Buddha away from temptation to a rarer air and the calm delights of flower-embowered gardens. The temptation of Buddha forms a most delicious chapter; first translated from the ancient Sanskrit language into Chinese by the great Chinese scholar Dhar Maraksha, and from Chinese into English by Prof. Samuel Beal:

Dancing women gathered about the Buddha; around his straight and handsome form. The half-clad forms bent in ungainly attitudes; their garments in confusion or like the broken

Kani flower; others pillow'd on their neighbor's lap, their hands and feet entwined together, their bodies lying in wild disorder; their hearts so light and gay, their forms so plump, their looks so bright. But the prince (Buddha) stood unmoved by his horse; his milk-white horse—unmoved. And now he said, "I leave this false society. I will mount my horse and ride swiftly to the deathless city. My heart is fixed beyond all change." The Devas then gave spiritual strength, and the prince (Buddha) mounted the gallant steed, fitted with all his jeweled trappings for a rider.

All the above is supposed to have happened over 2,500 years ago. And yet what turf writer of to-day can give a more dramatic sketch of the high-mettled horse than this? Here let me point a potent moral to adorn this dizzy, divinized history of the escape from temptation of the world's first great prophet.

THE HORSE SAVED BUDDHA.

Was it not the horse that saved Buddha and carried him away from the environment of evil? Have we not quoted enough of the history of the pagan classics to prove that for a thousand years of the brightest and best civilization known to the pagan world the horse was the divinely equipped motor of supernatural power. And have we not shown that in the most witching civilization of the ancient Orient the horse was the chosen instrument of the first great prophet of moral ethics to escape from evil thoughts and evil ways into the rarer region of a divinely appointed life? And in view of all this, have we not the basis of true moral judgment in the claim that the horse, in the evolution of all civilizations, has been always regarded as more than an animal? And is he not indissolubly linked in mythology, poetry and sculpture with the great prophets, heroes and the divine idols of the world?

A PARTING WORD.

As a parting word, let me voice the universal opinion of the horsemen and breeders of the United States. They are not asking any advice or aid from the Federal Government. All they ask is to be allowed to do business free from the cruel handicap of restrictive and unjust legislation. Let us aim all present and future legislation against the reign of prize fighting and all other brutal and degrading games, and give to the horse and his master, man, a chance to elevate the spirit and wholesome moral tone of the outdoor sports and pastimes of the American people.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the date given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings. Secretaries are earnestly requested to see that their organizations are properly included in the following list:

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n.....	Mar. 5-6-7, 1914.....	Auburn.....	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.....	June 10, 1915.....	141 W. 54th St.....	P. K. Nichols, Port Richmond, N. Y.
Alumni Ass'n U. S. Coll. Vet. Surg.....	April 15, 1915.....	Washington, D. C.....	C. R. Smith, Washington, D. C.
American V. M. Ass'n.....	Week beginning Aug. 30, 1915.....	Oakland, Cal.....	Nelson S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n.....	1st Week Feb., 1916.....	Little Rock.....	R. M. Gow, Fayetteville.
Ashabula, Lake & Geauga Vet. M. A. Ass'n Médécale Veterinaire Française "Laval".....	1st and 3d Thur. of each month.....	Painesville, O. Lec. Room, La- val Un'y, Mon.	R. A. Greenwood, Sec.-Treas.
B. A. I. Vet. In. A., Chicago.....	2d Fri. each month.....	Chicago.....	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., So. Omaha.....	3d Mon. each month.....	S. Omaha, Neb.....	H. A. Smith, Chicago, Ill.
Buchanan Co. Vet. Ass'n.....	Monthly.....	St. Joseph.....	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.....	December 10, 1913.....	San Francisco.....	F. W. Caldwell, St. Joseph, Mo.
Central Canada V. M. Ass'n.....	Feb. and July.....	Ottawa.....	John F. McKenna, Fresno.
Central N. Y. Vet. Med. Ass'n.....	June and Nov.....	Syracuse.....	A. E. James, Ottawa.
Chicago Veterinary Society.....	2d Tues. each month.....	Chicago.....	W. B. Switzer, Oswego.
Colorado State V. M. Ass'n.....	May 28-29, 1915.....	Fort Collins.....	D. M. Campbell, Chicago.
Connecticut V. M. Ass'n.....	Pending.....	New Haven.....	I. E. Newsom, Ft. Collins.
Delaware State Vet. Society.....	Jan., Apl. July Oct.....	Wilmington.....	A. T. Gilyard, Waterbury.
Genesee Valley V. M. Ass'n.....	2d week, July, 1913.....	Rochester.....	A. S. Houchin, Newark, Del.
Georgia State V. M. A.....	Dec. 22-23, 1913.....	Atlanta.....	J. H. Taylor, Henrietta.
Hamilton Co. (Ohio) V. A.....	.....	Idaho Falls.....	P. F. Bahnsen, Americus.
Idaho Ass'n of Vet'y Graduates.....	.....	E. St. Louis.....	Louis P. Cook, Cincinnati.
Illino Vet. Med. Ass'n.....	Nov. 20, 1914.....	Chicago.....	J. R. Fuller, Weiser.
Illinois State V. M. Ass'n.....	Dec. 3-4-5, 1914.....	Indianapolis.....	L. B. Michael, Collinsville, Ill.
Indiana Veterinary Association.....	Jan. 14, 1914.....	Topeka.....	L. A. Merillat, Chicago.
Iowa Veterinary Ass'n.....	.....	Lexington.....	A. F. Nelson, Indianapolis.
Kansas State V. M. Ass'n.....	Jan. 5-6, 1915.....	Philadelphia.....	H. B. Tremm, Rockwell City.
Kentucky V. M. Ass'n.....	Oct. & Feb. each year.....	Pending.....	J. H. Burt, Manhattan.
Keystone V. M. Ass'n.....	2d Tues. each month.....	Lake Charles.....	Robert Graham, Lexington.
Lake Erie V. M. Association.....	Pending.....	Waterville.....	Cheston M. Hoskins.
Louisiana State V. M. Ass'n.....	Sept., 1914.....	Baltimore.....	Phil. H. Fulstow, Norwalk, Ohio.
Maine Vet. Med. Ass'n.....	April 14, 1915.....	Young's, Boston.....	Hamlet Moore, New Orleans, La.
Maryland State Vet. Society.....	Pending.....	Lansing.....	H. B. Wescott, Portland.
Massachusetts Vet. Ass'n.....	4th Wed. each month.....	St. Paul.....	John H. Engel, Baltimore.
Michigan State V. M. Ass'n.....	Feb. 2, 3, 1915.....	Vicksburg.....	W. T. Pugh, Southbridge.
Minnesota State V. M. Ass'n.....	Jan. 13-14-15, 1915.....	Kansas City, Mo.....	W. A. Ewalt, Mt. Clemens.
Mississippi State V. M. Ass'n.....	1914.....	Galeburg, Ill.....	G. Ed. Leech, Winona.
Missouri Valley V. M. Ass'n.....	Feb. 2-3-4, 1915.....	St. Louis.....	J. D. Townsend, Louisville.
Mississippi Valley V. M. Ass'n.....	Semi-Annually.....	Helena.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n.....	July, 1915.....	New York, N. Y.....	G. E. McIntyre, Alexis, Ill.
Montana State V. M. A.....	Sept. 22-23, 1915.....	Lincoln, Neb.....	Chas. D. Folse, Kansas City.
Nat'l Ass'n B. A. I. Employees.....	2d Mon., Aug., 1915.....	Ithaca, N. Y.....	A. D. Knowles, Missoula.
Nebraska V. M. Ass'n.....	1st Mo. & Tu., Dec. '13.....	Wilson.....	S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
New York S. V. M. Soc'y.....	August 3-4-5, 1915.....	Fargo.....	Carl J. Norden, Nebraska City.
North Carolina V. M. Ass'n.....	June 23, 1914.....	Delphos.....	H. J. Milks, Ithaca, N. Y.
North Dakota V. M. Ass'n.....	Week of July 20, 1914.....	Columbus.....	J. P. Spoon, Burlington.
North-Western Ohio V. M. A.....	Nov. 1913.....	Upper Sandusky.....	A. F. Schalk, Agricultural College.
Ohio State V. M. Ass'n.....	Jan. 13-14, 1916.....	Oklahoma City.....	E. V. Hover, Delphos.
Ohio Soc. of Comparative Med.....	Annually.....	Philadelphia.....	F. A. Lambert, Columbus.
Ohio Valley Vet. Med. Ass'n.....	Pending.....	Manila.....	F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n.....	.....	Portland, Ore.....	J. C. Howard, Sullivan.
Ontario Vet. Ass'n.....	1st Week in Feb., 1914.....	Mon. and Que.....	S. H. Gallier, Norman.
Pennsylvania State V. M. A.....	March 2, 3, 1915.....	Providence.....	L. A. Wilson, Toronto.
Philippine V. M. A.....	Call of President.....	Centralia.....	John Reichel, Glenolden.
Portland Vet. Med. Ass'n.....	4th Tues. each month.....	St. Louis.....	David C. Kretzer, Manila.
Province of Quebec V. M. A.....	Jan. and June.....	Reading.....	Sam. B. Foster, Portland, Ore.
Rhode Island V. M. Ass'n.....	Pending.....	Philadelphia.....	Gustave Boyer, Rigaud, P. Q.
South Carolina Ass'n of Veter. ns.....	Aug. 3, 1915.....	Rapid City.....	J. S. Pollard, Providence.
South Illinois V. M. and Surg. Ass'n.....	1st Wed. fol. the 2d Sun. each month.....	Los Angeles.....	B. K. McInnes, Charleston.
St. Louis Soc. of Vet. Inspectors.....	Dec. 16, 1914.....	Nashville.....	F. Hockman, Iola.
Schuylkill Valley V. M. A.....	July 1, 1915.....	College Station.....	Wm. T. Conway, St. Louis, Mo.
Soc. Vet. Alumni Univ. Penn.....	Jan., Apl., July, Oct.....	St. P. Minneap.....	W. G. Huyett, Wernersville.
South Dakota V. M. A.....	4th Tues. each month.....	Salt Lake City.....	B. T. Woodward, Wash'n, D. C.
Southern Aux. of Cal. S. V. M. Ass'n.....	November, 1914.....	.....	S. W. Allen, Watertown.
South St. Joseph Ass'n of Vet. Insp.....	Nov., 1913.....	.....	J. A. Dell, Los Angeles.
Tennessee Vet. Med. Ass'n.....	2d Thu. each month.....	.....	H. R. Collins, South St. Joseph.
Texas V. M. Ass'n.....	Spring of 1914.....	.....	Jas. McMahon, Columbia.
Twin City V. M. Ass'n.....	.....	.....	Allen J. Foster, Marshall.
Utah Vet. Med. Ass'n.....	.....	.....	M. H. Reynolds, St. Paul, Minn.
Vermont Vet. Med. Ass'n.....	.....	.....	E. J. Coburn, Brigham City.
Veterinary Ass'n of Alberta.....	.....	.....	G. T. Stevenson, Burlington.
Vet. Ass'n Dist. of Columbia.....	3d Wed. each month	514 9th St., N. W.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Med. Ass'n, Geo. Wash. Univ.....	1st Sat. each month	Wash'ton, D. C.....	H. Stanley Gamble, 1329 Gallatin, Wash., D. C.
Vet. Ass'n of Manitoba.....	Feb. & July each yr.	Winnipeg.....	J. M. Cashell, 2115 14th Street.
Vet. Med. Ass'n of N. J.....	July, 1915.....	141 W. 54th St.....	Wm. Hilton, Winnipeg.
V. M. Ass'n, New York City.....	1st Wed. each month	Jersey City.....	E. L. Lobein, New Brunswick.
Veterinary Practitioners Club.....	Monthly.....	Staunton.....	R. S. MacKellar, N. Y. City.
Virginia State V. M. Ass'n.....	July 9-10, 1914.....	Pullman.....	T. F. O'Dea, Union Hill, N. J.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve.....	Yakima.....	Geo. C. Faville, North Emporia.
Washington State V. M. A.....	June, 1915.....	Buffalo.....	R. J. Donohue, Pullman.
Western N. Y. V. M. A.....	June 24, 1914.....	Pittsburgh.....	Carl Conier, Bellingham.
Western Penn. V. M. Ass'n.....	3d Thu. each month	Milwaukee.....	W. E. Frits, 358 Jefferson St., Buffalo
Wisconsin Soc. Vet. Grad.....	Feb. 10, 11, 1914.....	Chippewa Falls.....	Benjamin Gunner, Sewickley.
Wisconsin Vet. Med. Ass'n.....	July 14-15, 1915.....	.....	W. W. Arasberger, Watertown.
York Co. (Pa.) V. M. A.....	June, Sept., Dec., Mar	York.....	W. A. Walcott, Madison.
			E. S. Bausticker, York, Pa.

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